

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the present environment (i.e., affected environment) in the project area and changes that would be anticipated as a result of project alternatives, if implemented. Indirect effects are those effects that are caused by or would result from the proposed action and are later in time, but are still reasonably certain to occur. Some effects are confined to the proposed project area, while others are cumulative and therefore assessed with the environmental effects from past, present, or reasonably foreseeable future actions within the project area. Resource issues that are not of concern (i.e., based on their absence in the project area) are not addressed in this document; it is assumed that the proposed project would not contribute to cumulative impacts to these resources.

Past, present, and reasonably foreseeable future actions were identified based on information obtained from Yavapai County, CNF, ADOT, and the City of Sedona [#6]. Past and present actions within and adjacent to the project area include recreational activities (hiking, mountain biking, horseback riding, photography, camping, and bird watching), growth and development in the city of Sedona and the Village of Oak Creek, and tourism associated with the natural and cultural attractions in the area. Trail maintenance on CNF has been, and will continue to be ongoing. Construction is planned at the Bell Rock pullout, which will include the paving of several additional parking spaces. Controlled burns could also occur within Oak Creek Canyon. A new ranger station is proposed for construction, in 2005, south of the project limits at the intersection of SR 179 and Woods Canyon Road or at Bell Rock Vista north of the Circle K. Also planned for 2005 is the construction of additional trailheads and trails in CNF. FHWA and ADOT's SR 179 EA documents proposed improvements to SR 179 that could add additional lanes and other improvements. Additionally, a new commercial development is planned at the intersection of SR 179 and Avenda de Piedras in the Village of Oak Creek.

Within each of the following resources, direct, indirect, and cumulative impacts are addressed.

A. Soil

i. Affected Environment

Project area terrain is rolling, with elevations ranging from approximately 3,800 to 5,060 feet above mean sea level (msl). Soils within the project limits are of the Lithic Haplustolls-Lithic Argustolls-Rock Outcrop Association in the northern portion of the project area and the Tartugas-Purner-Jacks Association in the southern portion of the project area [#7]. The designated Lithic Haplustolls-Lithic Argustolls-Rock Outcrop soil association is characterized by rock outcrops and dark-colored, well-drained, shallow and very shallow soils formed in the residuum on igneous and sedimentary hills and mountains. The Tartugas-Purner-Jacks Associate consists of well-drained soils formed in residuum on limestone and sandstone riders, hills, and mountains south of the Grand Canyon [#8]. Near Bell Rock, portions of the project area are on bedrock areas where no topsoil is present.

The project area passes through CNF-designated sensitive and erosive soils. Sensitive soils have a low tolerance for impact and can, because of factors such as compaction and loss of vegetative cover, lose their ability to support life [#9]. The majority of the project area occurs on slopes less than 10 percent. In the northern portion of the project area, slopes associated with tributaries of Oak Creek can measure up to 30 percent. At Bell Rock, slopes in excess of 65 percent are present in the project area. In the southern portion of the project area—in the vicinity of the Village of Oak Creek—slopes are below 5 percent, with the exception of a small butte north of Jacks Canyon and east of the project area.

Currently, portions of the existing Bell Rock Pathway exhibit signs of erosion; material used in the construction of this trail has not retained its integrity. At several locations erosion has created cracks in the pathway and exposed subsurface trail material south of Bell Rock. During precipitation, the path becomes tacky and soil sticks at contact.

ii. Environmental Consequences

Each of the build alternatives would disturb approximately the same amount of land (29.7–31.1 acres). Under any build alternative, disturbance associated with construction would be a short-term source of sediment to local streams/washes and would decrease with the reestablishment of vegetation. Additionally, depending on terrain access and location relative to designated trails, any of the pipeline alignments would be driven (by all-terrain vehicles or cars) for maintenance activities approximately four times a year. This may cause additional impacts to the soils within the project limits. These impacts include exposure of soil through crushing/compaction of vegetation and soil displacement and loosening from repeated travel. Although these impacts would be ongoing, they would be relatively infrequent.

If any action alternative were selected, soils would be managed according to direction in the *Coconino National Forest Land and Resource Management Plan* [#5]. Management actions would emphasize maintenance of soil productivity. Because more than 1 acre of land would be disturbed, activities would require a Stormwater Pollution Prevention Plan (which would include an erosion control plan) to mitigate soil movement expected during construction and be in compliance with Section 402 of the Clean Water Act. Where possible, vegetation would be sheared or trampled, which would allow for retention of as much topsoil as possible. Furthermore, with each of the build alternatives, where feasible a minimum of the top 6 inches of soil would be segregated from the subsoil and stored apart from the subsoil; once the pipe would be placed and the subsoil backfilled and compacted, the topsoil would be replaced on top of the trench.

The locations of the staging areas would be coordinated with CNF and would use existing cleared areas where possible. Temporary fencing or flagging would be used to restrict construction activities to the designated staging areas, to limit soil disturbance. To reduce possible increases in surface erosion, disturbed areas would be recontoured to return the site to the approximate original ground surface. Additionally, UES would not operate construction equipment when ground conditions are such that unacceptable soil compaction or displacement could occur [#4]. Portions of the permanent maintenance

ROW that are trails and not revegetated would be shaped and drained to limit erosion. Also refer to Sections III. B. Vegetation and Invasive Species and III. H. Scenic Resources for measures involving revegetation that would also minimize erosion and sedimentation.

a. Blue Alternative

Construction of the Blue Alternative would disturb 16.8 acres of CNF land. Because the Blue Alternative would construct the pipeline adjacent to SR 179, the pipeline could be accessible by way of maintenance activities from the existing roadway, further minimizing soil impacts associated with maintenance. Because the Blue Alternative would be parallel to, and inside, the existing northbound SR 179 ROW, disturbance would often occur in areas of previously disturbed soils. The implementation of the Blue Alternative, along with past, present, and reasonably foreseeable actions, would not contribute to significant soil movement within the project area.

b. Red Alternative

Construction of the Red Alternative would disturb 17.7 acres CNF land. Approximately 6.1 acres of disturbance would occur on the existing Bell Rock Pathway, on soils that are currently disturbed by recreational use. Because of the proximity of the Red Alternative to Bell Rock, construction would require cutting into the existing bedrock in this area. UES would reconstruct the existing pathway surface within the project limits, which would address the existing erosion issue on the path. South of Bell Rock, the Red Alternative would follow an existing overhead utility line and would require 3.2 acres (0.65 miles) of disturbance in an area with moderate previous disturbance.

Construction of the Red Alternative may result in recreational users following the pipeline alignment where it diverges from the Bell Rock Pathway, which could result in long-term disturbance to sensitive soils. The implementation of the Red Alternative, along with past, present, and reasonably foreseeable actions, would not contribute to significant soil movement within the project area.

c. Orange Alternative

Construction of the Orange Alternative would disturb 18.2 acres of CNF land. Approximately 4.9 acres of disturbance would occur on the existing Bell Rock Pathway, on soils that are currently disturbed by recreational use. Because this alternative alignment would cross over existing SR 179 north of Bell Rock, no disturbance to the bedrock in this area would be required. UES would reconstruct the existing pathway surface within the project limits, which would address the existing erosion issue on the path.

Construction of the Orange Alternative might result in recreational users following the pipeline alignment where it diverges from the Bell Rock Pathway, which could result in long-term disturbance to previously undisturbed sensitive soils. In the northern portion of the project area, the Orange Alternative would construct the pipeline predominantly within already-disturbed soils of the Bell Rock Pathway; to the south, the pipeline could be accessible from the future southbound lanes of SR 179 (if constructed), further

minimizing soil impacts associated with pipeline maintenance. The implementation of the Orange Alternative, along with past, present, and reasonably foreseeable actions, would not contribute to significant soil movement within the project area.

d. Yellow Alternative

Construction of the Yellow Alternative would disturb 16.3 acres of CNF land. The Yellow Alternative within the CNF would disturb a moderately undisturbed area. As the Yellow Alternative traversed the landscape, cut and fill might be required to navigate steeply sloped areas. Soil loss from disturbance from the project footprint would be minimized after construction because the pipeline ROW would be reconstructed and maintained as a trail. Construction of the pipeline alignment as a recreational trail might also reduce soil loss from current unauthorized use of rogue trails west of SR 179, but this would be offset by a potential influx of users and their potential off-trail activity that could induce adjacent soil disturbance. The implementation of the Yellow Alternative, along with past, present, and reasonably foreseeable actions, would not contribute to significant soil movement within the project area.

e. Purple Alternative

Construction of the Purple Alternative would disturb 16.3 acres of CNF land. Because this alternative assumes that a southbound, bifurcated SR 179 would be constructed, the soil disturbance would occur within the proposed ultimate footprint of SR 179, in an area that would eventually be disturbed. Because the Purple Alternative would construct the pipeline adjacent to SR 179 (which is assumed under this alternative), the pipeline could be accessible for maintenance activities from the existing roadway, minimizing soil impacts associated with maintenance. The Purple Alternative assumes that southbound SR 179 is reconstructed in a bifurcated section; therefore, soil impacts associated with the Purple Alternative would be negligible when compared and added to the soil movement associated with the proposed SR 179 improvements. The implementation of the Purple Alternative, along with past, present, and reasonably foreseeable actions, would not contribute to significant soil movement within the project area.

f. No Action Alternative

Because no ground disturbance would occur, the No Action Alternative would have no impact on soils in the project area. Because this alternative would have no direct impact to soils in the project area, it would not contribute to a cumulative impact on soils in the project area.

B. Vegetation and Invasive Species

i. *Affected Environment*

The project area is located within a transitional area that contains elements of the Great Basin Conifer Woodland Biotic Community [#10], the Interior Chaparral Biotic Community [#11], and the Semidesert Grassland Biotic Community [#12]. Shrubby chaparral species are dominant throughout this area, with interspersed pinyon-juniper woodland tree species becoming prominent midway between Sedona and the

Village of Oak Creek. Characteristic chaparral species include tough-leaved evergreens such as shrub live oak (*Quercus turbinella*), manzanita (*Arctostaphylos pungens*), squaw bush (*Rhus trilobata*), mountain mahogany (*Cercocarpus montanus*), and wait-a-minute bush (*Mimosa biuncifera*). Tree species in the project area include Arizona cypress (*Cupressus arizonica*), Utah juniper (*Juniperus osteosperma*), and pinyon pine (*Pinus edulis*). Various grassland species including grammas (*Bouteloua* spp.) and three-awns (*Aristida* spp.) occur in patches throughout the Bell Rock Pathway corridor, and a remnant grassland that was historically intensively grazed is visible just north of the Village of Oak Creek, [#13]. The portion of the project area within the Village of Oak Creek is in developed residential and commercial areas. No permanent water sources, wetlands, or riparian vegetation are present in the project area.

Under Executive Order 13112, dated February 3, 1999, projects which occur on federal lands or are federally funded must, “subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; [and] (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded ...” Invasive species displace native plants and harm animal habitats by replacing food plants. They threaten biodiversity, habitat quality, and ecosystem functions and can change fire patterns [#14].

An invasive species survey was completed as part of the environmental process for the *SR 179 (Village of Oak Creek to Sedona) Final Environmental Assessment* [#15]. The current project area overlaps with this previous work. The survey identified the presence of wild oats (*Avena fatua*), diffuse knapweed (*Centaurea diffusa*), Kochia (*Kochia scoparia*), Dalmation toadflax (*Linaria genestifolia*), Johnson grass (*Sorghum halepense*), and mullein (*Verbascum thapsus*).

ii. Environmental Consequences

During construction, a 40-foot temporary construction ROW would be disturbed. Vegetation removal would be required for at least 10 feet of this corridor; where possible, vegetation would be sheared or trampled, which would minimize the amount of revegetation needed. After construction, a 10-foot-wide open area would be required for permanent maintenance/emergency access by UES. With any of the build alternatives, short-term impacts to grasses are anticipated after construction (because this vegetation type is reestablished relatively quickly), with long-term impacts to trees also expected; these vegetation impacts would decrease with time, as new vegetation is established. In undeveloped areas not on designated trails, this 10-foot-wide maintenance ROW would be seeded with grasses. Revegetation of the area disturbed by the construction activities would help restore the area to its former condition. To minimize vegetation impacts, the locations of the staging areas would be coordinated with CNF and would use existing cleared areas where possible. Temporary fencing or flagging would be used to restrict construction activities to the designated staging areas. Refer to Section III. H. Scenic Resources for additional revegetation measures as required for scenic impacts.

Construction of any of the build alternatives could potentially introduce invasive species seed and allow the spread of existing invasive species. Construction and maintenance equipment may transport invasive species seed on- and off-site. All build alternatives include mitigation measures that would require keeping construction and maintenance equipment free of invasive species by washing the equipment prior to entering the construction site, prior to moving equipment from infested to non-infested areas of project, and prior to departing the site, as well. The location of the wash site in the project limits would be reported to CNF for future monitoring. Upon completion of construction, revegetation with native seed would be required. Any fill, seed, or mulch material brought in from off-site would be free of invasive species seed, and construction and maintenance equipment would be free of these seeds as well. UES will mitigate invasive species that are present within the construction corridor to further prevent the spread of invasive species seed. UES will develop a mitigation plan for invasive species within the construction zone. These mitigation measures would minimize the potential for new infestation or the spread of invasive species seed.

a. Blue Alternative

Because this alternative would be constructed within ADOT's existing ROW, vegetation disturbance would occur in several areas that have been previously disturbed. Up to 29.7 acres of vegetation removal/disturbance would be required to construct this alternative. Indirect vegetation impacts associated with trampling and use of the alignment by visitors to CNF would be minimized by this alternative's proximity to the highway; that is, informal users are expected to be discouraged from walking along the pipeline alignment because of fear of conflict with motorized vehicles. Construction of the Blue Alternative would contribute to the cumulative loss of vegetation in the area; however, this loss is anticipated to be minor after implementation of applicable mitigation measures.

b. Red Alternative

Construction of the Red Alternative would require disturbance of up to 30.6 acres of disturbance. This alternative generally follows the existing Bell Rock Pathway (for a greater distance than the Orange Alternative), where visitor expectation is high; therefore, this alternative would require the most comprehensive revegetation efforts when compared to the other alternatives (in terms of expected timeframe for reestablishment of native vegetation and use of container plantings). Unauthorized use of areas of the Red Alternative that are not in the same alignment as the Bell Rock Pathway and maintenance activities associated with the pipeline could indirectly result in further disturbance to vegetation.

Construction of the Red Alternative would contribute to the cumulative loss of vegetation in the area; however, this loss is anticipated to be minor after implementation of applicable mitigation measures.

c. Orange Alternative

Construction of the Orange Alternative would require disturbance of up to 31.1 acres. Unauthorized use of areas of the Orange Alternative that are not in the same alignment as the Bell Rock Pathway could indirectly result in further disturbance to vegetation.

Implementation of the Orange Alternative would contribute to the cumulative loss of vegetation in the area; however, this loss is anticipated to be minor after implementation of applicable mitigation measures.

d. Yellow Alternative

Under the Yellow Alternative, up to 29.1 acres of vegetation would be removed/disturbed. Because this alternative is west of SR 179, disturbance would occur in a generally undisturbed area. A phased revegetation plan would be implemented with this alternative. UES would initially seed the disturbed area during construction, and when ADOT decides to not construct SR 179 (which is assumed under the Yellow Alternative), UES would return to revegetate the area with additional plant material.

The installation of a formal trail may limit current unauthorized use west of SR 179 and may, therefore limit current vegetation disturbance. However, because the Yellow Alternative would be constructed as a trail, an influx of additional recreational users into this area would result in additional indirect impacts to vegetation as users disturb areas off the designated trails.

Implementation of the Yellow Alternative would contribute to the cumulative loss of vegetation in the area; however, this loss is anticipated to be minor after implementation of applicable mitigation measures.

e. Purple Alternative

Under this alternative, up to 29.1 acres of vegetation would be removed/disturbed. Because this alternative is west of SR 179, disturbance would occur in a generally undisturbed area. However, because this alternative assumes that the SR 179 improvements would be constructed in this area (so that the alignment is within the right-of-way of FHWA and ADOT's SR 179 EA proposed improvements), overall vegetation disturbance would be limited because implementation would result in a single disturbance area (as compared to the potential dual disturbance corridors if the Red Alternative were chosen and SR 179 were subsequently built). A phased revegetation plan would be implemented with this alternative; UES would initially seed the disturbed area during construction, and when ADOT decides to construct SR 179 (which is assumed under the this alternative), ADOT would return to revegetate the area with additional plant material.

Indirect vegetation impacts associated with trampling and use of the alignment by visitors to the CNF would be minimized by this alternative's proximity to the highway; that is, informal users are expected to be discouraged from walking along the pipeline alignment because of fear of conflict with motorized vehicles. Furthermore, vegetation disturbance from maintenance vehicles would be limited, because access would be possible from the future SR 179 southbound lanes (as assumed for this alternative).

Implementation of the Purple Alternative would contribute to the cumulative loss of vegetation in the area; however, this loss is anticipated to be minor after implementation of applicable mitigation measures and a shared footprint with the assumed SR 179 disturbance area.

f. No Action Alternative

Because no ground disturbance would occur, the No Action Alternative would have no impact on vegetation in the project area and would not directly, indirectly, or cumulatively affect the invasive species populations within the project area.

C. Water Resources

i. *Affected Environment*

The project area generally traverses an upland area containing numerous well-defined drainages. South of Bell Rock, drainage is generally east to southeasterly into Jacks Canyon, which is adjacent to the project area and a tributary of Wet Beaver Creek. North of Bell Rock, drainage is generally westerly toward Oak Creek (approximately 3,500 feet west of the project area)—a designated “unique water of the United States.” A major drainage divide occurs at Bell Rock, between the Oak Creek and Beaver Creek watersheds.

A review of Flood Insurance Rate Maps of the project area revealed that the portion of the project area along Jacks Canyon Road is located within the 100-year floodplain of Jacks Canyon in a Federal Emergency Management Agency designated Zone A [#16]. Zone A delineates “special flood hazard areas inundated by 100-year flood” where base flood elevations have not been determined.

ii. *Environmental Consequences*

Because the impacts to water quality with all of the build alternatives are the same, they will not be discussed separately in this section. Instead a discussion of direct, indirect, and cumulative impacts from all the build alternatives and from the No Action Alternative will follow.

a. Build Alternatives

Based on field reconnaissance, there are drainages in the project area that would be considered waters of the United States, under the jurisdiction of the US Army Corps of Engineers (based on Section 404 of the Clean Water Act). Activities in these drainages would require a Section 404 permit; it is anticipated that construction activities associated with any of the build alternatives would require a Nationwide Permit (NWP) Number 12 (Utility Line Activities). Under the conditions of a NWP Number 12, if work within any wash exceeds 500 linear feet of disturbance in a jurisdictional wash a Preconstruction Notification would be required, and if work disturbed over 0.5 acre within a jurisdictional wash, an individual permit would be required. Therefore, construction personnel would adhere to the terms and conditions of applicable US Army Corps of Engineers Section 404 permit(s). With any build alternative, UES would obtain any required Section 404/Section 401 Water Quality Certification issued by the Arizona Department of Environmental Quality (ADEQ) prior to construction.

In compliance with Section 402(p) of the Clean Water Act, since construction of any of the build alternatives would disturb more than 1 acre of land, the project would require an Arizona Pollutant Discharge Elimination System (AZPDES) general permit. As part of this general permit, UES would prepare a Stormwater

Pollution Prevention Plan (SWPPP); the SWPPP would reduce erosion, minimize sedimentation, and eliminate the discharge of nonstormwater pollutants.

Maintenance activities may require the use of motorized vehicles; if required, this activity would occur occasionally (3–4 times) throughout the year. Although these motor vehicles could leak hazardous materials into streams or onto permeable soil, regular maintenance of the vehicles and the infrequency of their presence on the alignments would make any indirect impacts to water quality associated with maintenance activities negligible. Additionally, to prevent pollutants from being discharged into watercourses, UES would not refuel or service construction equipment within or near channels, streams, or other watercourses [#4].

With the adherence to mitigation measures as required by permitting conditions from the US Army Corps of Engineers, ADEQ, and CNF, no long-term adverse impacts (either direct, indirect, or cumulative) would be anticipated as a result of the build alternatives.

b. No Action Alternative

No activities would occur as a result of the No Action Alternative and, therefore, there would be no direct, indirect, or cumulative impacts to water resources associated with this alternative.

D. Wildlife

i. Affected Environment

Jacks Canyon, located near the southern end of the project area, is a wash that parallels a portion of SR 179 between mileposts (MPs) 304.5 and MP 305.5. Numerous birds, mammals, reptiles, and amphibians are present within the project area, especially associated with the denser vegetation found along the wash. These species include mule deer, javelina, brush mouse, scrub jay, Gambel's quail, bridled titmouse, coyote, and western whiptail lizard. During the environmental assessment for ADOT's proposed SR 179 project, the Arizona Game and Fish Department (AGFD) identified several wildlife movement corridors that cross the existing highway. These corridors are used by various species of wildlife, including javelina, mule deer, coyote, bobcat, and other smaller mammals [#15]. One wildlife movement corridor is located in the current project area, following Jacks Canyon wash on the east side of Highway 179. The vegetation along the wash provides cover for wildlife movements between the Jacks Canyon/Munds Mountain Wilderness to the northeast of the project area, around the Village of Oak Creek, and south into the Dry Beaver Creek drainage, east and west of SR 179.

ii. Environmental Consequences

None of the alternatives considered in detail would impact riparian habitat or the wildlife habitat movement corridor associated with Jacks Canyon. For each of the build alternatives, short-term disturbance to wildlife and/or wildlife habitat would occur during construction as well as during maintenance activities and include the temporary displacement of birds and possible mortality of small burrowing mammals. Negligible

long-term loss of habitat is anticipated for the Blue, Red, Orange, Yellow, and Purple Alternatives. No long-term loss of habitat would occur under the No Action Alternative.

a. Blue Alternative

Construction activities associated with the Blue Alternative would result in the temporary disturbance of 16.8 acres of land on the CNF. Within the CNF, the Blue Alternative's pipeline would be close to SR 179, a corridor whose habitat values have already been degraded. The Blue Alternative is anticipated to negligibly contribute to cumulative impacts to wildlife in the area.

b. Red Alternative

Construction activities associated with the Red Alternative would result in the temporary disturbance of 17.7 acres of land on the CNF. Within the CNF, the Red Alternative's pipeline would share an alignment with Bell Rock Pathway, a well-traveled trail. The Red Alternative is anticipated to negligibly contribute to cumulative impacts to wildlife in the area.

c. Orange Alternative

Construction activities associated with the Orange Alternative would result in the temporary disturbance of 18.2 acres of land on the CNF. Within the National Forest, the Orange Alternative's pipeline would partially share an alignment with Bell Rock Pathway, a well-traveled trail. The Orange Alternative is anticipated to negligibly contribute to cumulative impacts to wildlife in the area.

d. Yellow Alternative

Construction activities associated with the Yellow Alternative would result in the temporary disturbance of 16.3 acres of land on the CNF. Within the National Forest, the Yellow Alternative's pipeline corridor would be reconstructed as a trail, which could cause indirect impacts to vegetation and wildlife with the introduction of recreation users in the area, and minor cumulative impacts by increasing the amount of human activity within the forest. The Yellow Alternative is anticipated to negligibly contribute to cumulative impacts to wildlife in the area.

e. Purple Alternative

Construction activities associated with the Purple Alternative would result in the temporary disturbance of 16.3 acres of land on the CNF. Within the National Forest, the Purple Alternative's permanent pipeline corridor would be located along SR 179 (assumed under this alternative). The Purple Alternative is anticipated to negligibly contribute to cumulative impacts to wildlife in the area.

f. No Action Alternative

The No Action Alternative would have no direct, indirect, or cumulative impacts to wildlife because no activity would occur under this alternative.

E. Threatened, Endangered, and Sensitive Species

i. Affected Environment

A Wildlife Specialist Report was completed to address potential impacts to biological resources in the project area [#17]. The US Fish and Wildlife Service (USFWS) list of threatened, endangered, proposed, candidate, and conservation agreement species potentially occurring in Coconino and Yavapai Counties, and the list of US Department of Agriculture Forest Service (USFS) Sensitive Species potentially occurring on the Red Rock Ranger District of the CNF were reviewed. The project area is not within the vicinity of any proposed or designated critical habitat. Based on the presence of habitat and historical records of occurrence, the following species may occur within the project area and were therefore evaluated in the Wildlife Specialist Report: bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), Arizona night lizard (*Xantusia vigilis arizonae*), aryxna giant skipper (*Agathymus aryxna*), early elfin (*Incisalia fotis*), Comstock's hairstreak (*Callophrys comstocki*), Freeman's agave borer (*Agathymus baueri freemani*), Neumogen's giant skipper (*Agathymus neumogeni*), Hualapai milkwort (*Polygala rusbyi*), Tonto Basin agave (*Agave delamateri*), and Verde Valley sage (*Salvia dorrii mearnsii*). These species are discussed below. Species included in the USFWS and CNF lists, but excluded from further evaluation, are addressed in Appendix B.

a. Bald Eagle, *Haliaeetus leucocephalus* (Endangered Species Act [ESA] listed Threatened)

The total range of the bald eagle includes most of North America. Historically, bald eagles in Arizona nested on the Mogollon Rim at Stoneman Lake, Mormon Lake, and Lake Mary, although breeding at these sites has since ceased. Presently, bald eagles are known to breed from the lower desert (1,100 feet above msl) to higher elevation woodlands around 7,900 feet above msl, with the majority of breeding sites occurring along the Salt and Verde Rivers in the central part of the state [#18].

In Arizona, wintering bald eagles can be seen statewide at elevations ranging from 460 to 7,600 feet above msl in a wide variety of habitats [#18]. Wintering eagles arrive in the fall, usually late October or early November, and leave in early to mid-April. The bald eagle's diet consists mainly of fish, and is supplemented by waterfowl, terrestrial vertebrates, and carrion. Thus, optimal bald eagle foraging habitat consists of areas near large, permanent water sources such as rivers or reservoirs. Bald eagle perching habitat consists of tall trees or cliffs that provide unimpeded views [#19].

In Arizona, bald eagle nest surveys have been conducted annually since 1972, with the exception of 1976 and 1977 [#20]. These surveys have been conducted by various state, tribal, and federal agencies. In 2002, AGFD biologists surveyed 47 historical, current, and suspected breeding areas (BAs) throughout the

state, finding 41 of those BAs to be occupied. In addition, AGFD recorded 23 successful breeding attempts for that year [#21]. The nearest known BA is approximately 13 miles southwest of the project area, near the confluence of Oak Creek and the Verde River [#22]. Two young fledged from this BA in 2002 [#21].

The project area does not contain suitable nesting habitat for bald eagles, and bald eagles are not known to nest near the project area; however, bald eagles are seen throughout the Sedona area during the winter months [#22]. The project area does contain marginally suitable foraging habitat for migrating or wintering bald eagles. Foraging habitat is only marginally suitable because a large or moderate-sized body of water containing abundant prey does not occur close to the project area. Furthermore, the quality of the habitat along this portion of SR 179 has been degraded because of commercial and residential development and the high traffic volumes associated with the roadway.

b. American Peregrine Falcon, *Falco peregrinus anatum* (USFS Sensitive)

The total range of the American peregrine falcon includes North America, Central America, and South America. The American peregrine falcon breeds from March through August in Arizona wherever sufficient prey species are available near cliffs [#18]. The Colorado Plateau, in particular the Mogollon Rim and Grand Canyon, contains most of Arizona's breeding peregrines [#23]. The nearest known eyries (bird nests built on cliffs or other high places) are within 2 miles of the project area, one at Cathedral Rock and another at Lee Mountain. However, the Lee Mountain eyrie is suspected to have moved to Gibraltar Rock, north of Courthouse Butte [#22]. This puts the project area within the typical foraging range, 8 miles, of the eyries [#18].

American peregrine falcons occupy a vast assortment of habitat types that are associated with cliffs, canyons, and open spaces [#23]. This species occurs throughout the state during the migration season (March–April and September–October) and in suitable habitat as resident breeders and winter visitors [#18]. As population numbers and competition for resources have increased, American peregrine falcons have been selecting marginally suitable nest sites, which has increased their distribution statewide. However, American peregrine falcons most often select a nesting site that is associated with sheer cliffs, open areas, and/or open bodies of water. Cliffs are essential for nesting and are used as vantage points for hunting. American peregrine falcons primarily feed on birds and bats. Foraging habitat occurs in open areas, such as cliff faces, sparse desertscrub, and open bodies of water where no escape cover for prey is present [#18]. Plant communities can vary in American peregrine falcon habitat, ranging from Sonoran and Mohave desertscrub to mixed conifer forests at elevations ranging from 400 feet to 9,000 feet above msl [#23].

American peregrine falcon reproductive surveys were conducted throughout Arizona by AGFD biologists for 4 years beginning in 1992 [#24]. In the first year of the study, there were 172 known breeding areas, and as of 1995, a total of 206 breeding areas had been confirmed. Over the 4 years studied, an average of 51 percent of nests were successful, with an average of 2.1 young produced per successful breeding area.

The project area does not contain suitable nesting or perching habitat for the American peregrine falcon, although marginally suitable foraging habitat is present. However, the project area is not considered preferred habitat because of the lack of cliffs and open expanses. In addition, cliffs are present approximately 1 mile east of the project area, and this region would be much more likely to attract foraging American peregrine falcons.

c. Arizona Night Lizard, *Xantusia vigilis arizonae* (USFS Sensitive)

This subspecies of night lizard occurs in central Arizona along the southern edge of the Colorado Plateau in Mohave, Pinal, and Yavapai counties. The Arizona night lizard is found on arid and semiarid granite outcroppings and rocky areas in pinyon-juniper and chaparral-oak communities in habitats with fallen leaves, vegetative debris, agaves, and Joshua trees and other yuccas [#25; #26]. This species is very secretive and reclusive; therefore, cover is an important habitat component. It feeds on termites, ants, beetles, and flies encountered under decaying vegetation or rocks [#26]. The Arizona night lizard is found at elevations ranging from 3,000 to 3,800 feet above msl [#25]. The project area contains rock outcrops in Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Therefore, suitable habitat for the Arizona night lizard is present in the project area.

d. Aryxna Giant Skipper, *Agathymus aryxna* (USFS Sensitive)

The total range of the aryxna giant skipper includes Arizona and southwestern New Mexico to Sonora, Mexico, and possibly as far south as Durango, Mexico. In Arizona, this butterfly species is known from as far north as Gila County then southward through southeastern Arizona. County records confirm occurrences in Cochise, Graham, Pima, Pinal, and Santa Cruz counties [#27].

Aryxna giant skippers have been found between 4,585 and 7,642 feet above msl on open hillsides, in grasslands and in rocky canyons where stands of the host plant occurs [#27]. *Agave palmeri* is a well-documented host species for the larvae of the aryxna giant skipper, although other species of agave may also be used. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. The host plant, *Agave palmeri*, does occur in this area; therefore, suitable habitat for the aryxna giant skipper is present in the project area.

e. Early Elfin, *Incisalia fotis* (USFS Sensitive)

The early elfin's range includes southeastern California, southern Nevada, central Utah, southwest Colorado, northern Arizona, and northwestern New Mexico [#28; #29]. The early elfin is a butterfly of desert rocky canyons and hills, usually in pinyon or pinyon-juniper habitat [#28; #29]. Cliff-rose (*Cowania mexicana* var. *stansburiana* [= *Purshia stansburiana*]) is the host plant for caterpillars of this species and is therefore a component of suitable habitat [#28]. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Cliff-rose was

present during a pedestrian survey of the project area corridor; therefore, suitable habitat for this species is present in the project area.

f. Comstock's Hairstreak, *Callophrys comstocki* (USFS Sensitive)

Comstock's hairstreak occupies territories in the Great Basin and arid intermountain West from northern Nevada and eastern California east to southern Utah and western Colorado [#29]. Suitable habitat for this butterfly occurs in remote, undisturbed desert canyons and ravine bottoms in sagebrush scrub and pinyon-juniper woodland habitats [#30; #29]. Caterpillar host species include various wild buckwheats (*Eriogonum* spp.), especially Wright's buckwheat and racemose buckwheat [#30; #29]. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Wild buckwheat occurs in this area; therefore, suitable habitat for the Comstock's hairstreak is present in the project area.

g. Freeman's Agave Borer, *Agathymus baueri freemani* (USFS Sensitive)

The total range of the Freeman's agave borer includes only west-central Arizona (Bagdad, Kirkland, Hillside, and Date Creek). This butterfly species is found in desert, shrubland/chaparral, conifer woodland, hardwood woodland, and mixed woodland communities in canyons and rocky slopes on desert mountains. Freeman's agave borer caterpillars are known to feed on *Agave deserti* and *A. Chrysantha*, although other species of agave may also be used [#31]. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Host plant species potentially occur in this area; therefore, suitable habitat for the Freeman's agave borer is present in the project area.

h. Neumogen's Giant Skipper, *Agathymus neumogeni* (USFS Sensitive)

This species of agave borer is found from central Arizona to west-central New Mexico and southern New Mexico to West Texas [#29]. Suitable habitat for this butterfly includes desertscrub, shrubland/chaparral, shrub-grassland or open conifer woodland, or mixed woodland. Parry's agave (*Agave parryi*) is the host species used for egg laying and caterpillar food, and is therefore an important component of suitable habitat for this species [#32; #29]. Parry's agave was observed during the pedestrian survey of the project corridor. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Suitable habitat for Neumogen's giant skipper occurs in the project area because the project area occurs within the range and habitat type of this species and because host plants used for reproduction are present.

i. Hualapai Milkwort, *Polygala rusbyi* (USFS Sensitive)

Hualapai milkwort is known to occur only in central Arizona [#33; #34]. This plant occurs on limestone-derived soils, especially those of Verde Formation, sandy flats, rock, gravel, and silt in desert grassland and juniper woodland habitats from 3,200 to 5,000 feet above msl [#33]. The project area is located within Great

Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Soils in the project area include well-drained soils that formed in residuum on limestone. Therefore, suitable habitat for this species is present in the project area.

j. Tonto Basin Agave, *Agave delamateri* (USFS Sensitive)

Tonto Basin agave, a succulent perennial, is known from a small geographic area in central Arizona, and is found from Young to the San Carlos Reservoir, in the foothills of the Mazatzal and the Sierra Ancha Mountains, the Mazatzal Mountains near Sunflower, and in the Verde Valley area. This agave is a cultivated hybrid that is found in association with archaeological features, and the entire population consists of about 90 clones [#35].

Tonto Basin agave is found atop benches, at edges of slopes, and on open hilly slopes in Sonoran Desertscrub, interior chaparral, and Great Basin conifer woodland biotic communities from 2,190 to 5,100 feet above msl. This agave is often found on hillside terraces at archaeological sites overlooking major drainages and perennial streams [#35]. The project area is located within Great Basin conifer woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. The project area is within the elevation range and habitat type where this species has been previously found, though it is only known from one location in the Verde Valley. Of the known archaeological sites within the project area none provided suitable conditions for this plant.

k. Verde Valley Sage, *Salvia dorrii mearnsii* (USFS Sensitive)

Verde Valley sage, a woody perennial, is known only from central Arizona, and is found in the Verde Valley, upper Verde River, and near Sedona [#36]. Verde Valley sage is found from 3,200 to 4,560 feet above msl on grayish, powdery calcareous soils and white, powdery gypseous limestone of Tertiary lakebed deposits in open Sonoran desertscrub; red-brown clay and sandy soil of the Supai/Hermit Formation in pinyon-juniper woodland; and Redwall Limestone [#37]. The project area is located within pinyon-juniper woodlands, interior chaparral, and semidesert grasslands at elevations of 3,800 to 5,060 feet above msl. Dark-colored, limestone-derived soils are present in the project area. Therefore, suitable habitat for the Verde Valley sage is present in the project area.

ii. *Environmental Consequences*

The following describes the impacts of the alternatives on the above-discussed species and habitat. To avoid lengthy and repetitive documentation, the impacts in this section are organized by species, rather than by alternative.

Because no construction activities would occur under the No Action Alternative, this alternative would have no direct or indirect impact to any Threatened, Endangered, or Sensitive Species and, therefore, would also not contribute to any cumulative impact on any species.

For each species addressed, a temporary loss of vegetation in the construction corridor and a permanent loss of vegetation within the permanent ROW would occur as a result of construction activities. However, the build alternatives are not expected to change the baseline conditions along any of the proposed alignments for the pipeline and, thus, would not result in any of the potential indirect impacts commonly associated with pipeline construction projects, such as habitat loss caused by facilitation of private development or the disruption of movement corridors. Unless otherwise addressed, the build alternatives would not result in indirect impacts to these species.

People and their pets might use the pipeline corridor as an informal trail (Red and Orange Alternatives); the Yellow alternative would construct a new trail. Increased human access throughout the Verde Valley can have a minor cumulative contribution to disturbance of wildlife and trampling of vegetation and have a minor indirect impact on all analyzed species.

a. Bald Eagle, *Haliaeetus leucocephalus*

Construction activities associated with the build alternatives would result in the temporary disturbance of up to 18.2 acres of marginally suitable bald eagle foraging habitat for migrating/wintering bald eagles (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Tree removal would occur within the ROW to allow for construction of the pipeline in each of the build alternatives analyzed; this removal would occur within habitat that is not used for nesting by bald eagles. In addition, the trees that would be removed are short-stature and likely would not be used for perching by bald eagles. The amount of low-quality foraging habitat that would be disturbed as a result of any of the build alternatives is insignificant relative to the total available foraging habitat in the area and would not affect the ability of wintering or migrating bald eagles to use the general area. In conclusion, there are no potential direct or indirect effects to this species as a result of the analyzed build alternatives.

b. American Peregrine Falcon, *Falco peregrinus anatum*

Construction activities associated with the build alternatives would result in the temporary disturbance of up to 18.2 acres of marginally suitable American peregrine falcon foraging and perching habitat on CNF land (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Vegetation clearing would take place within marginally suitable habitat that is not used for nesting by American peregrine falcons. Foraging habitat in the project area is marginal and its quality is further degraded because of nearby commercial and residential development and because of traffic on SR 179. The amount of marginally suitable habitat that would be lost is negligible relative to the total available foraging habitat in the area, would not result in a reduction in prey availability, and thus would not affect the foraging abilities of the American peregrine falcon in the general area. Although there are known American peregrine falcon eyries within the typical foraging range of the project area, disturbance to foraging habitat would be minimal and is not expected to reduce foraging opportunities for this species; therefore, no direct or indirect impacts are anticipated.

c. Arizona Night Lizard, *Xantusia vigilis arizonae*

Construction alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat on National Forest land for the Arizona night lizard (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Operation of heavy equipment off-road during excavation, and construction in suitable habitat for the Arizona night lizard, could result in injury to or the death of individuals of this species, if present. The amount of habitat disturbed as a result of implementation of any of the build alternatives is minimal relative to the total available habitat in the general area. This species is very secretive, making its presence hard to detect, and surveys have not been done to determine whether this species occurs in the project area. Therefore, this project may result in direct impacts to the Arizona night lizard.

The proposed project may impact individuals of Arizona night lizard, but is not likely to result in a trend toward federal listing or loss of viability.

d. Aryxna Giant Skipper, *Agathymus aryxna*

The proposed build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat for the aryxna giant skipper on National Forest land (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Host plants that provide breeding locations and food for caterpillars would also be removed by clearing the 40-foot-wide corridor in the temporary ROW needed for construction. Off-road operation of heavy equipment, and construction in suitable habitat for the aryxna giant skipper, could result in injury to or death of individuals of this species, if present. Surveys have not been conducted to determine whether this species occurs in the project area; therefore, this project may result in direct impacts to the aryxna giant skipper.

If host plants were removed or revegetated at lower densities later in time (possible with all the build alternatives), the result would be a reduction in available food and in sites available for reproduction. Therefore, this project may result in indirect impacts to the aryxna giant skipper. The proposed project may impact individuals of aryxna giant skipper, but this would not likely result in a trend toward federal listing or loss of viability.

e. Early Elfin, *Incisalia fotis*

The proposed project's build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat for the early elfin on National Forest land (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). In addition, host plants that provide breeding locations and food for caterpillars would be removed by clearing the temporary construction ROW. Operating heavy equipment off-road during excavation, and constructing in suitable habitat for the early elfin, which could result in injury to or death of individuals of this species, if present, would occur with implementation of each of the build alternatives. Surveys to determine whether this species occurs in the project area have not been completed; therefore, this project may result in direct impacts to the early elfin.

If cliff-rose plants were removed or revegetated at lower densities later in time, the result would be a reduction in available food and in sites available for reproduction. Therefore, construction of any of the proposed build alternatives may result in indirect impacts to the early elfin. The proposed project may impact individuals of early elfin, but is not likely to result in a trend toward federal listing or loss of viability.

f. Comstock's Hairstreak, *Callophrys comstocki*

The build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat for the Comstock's hairstreak on CNF land (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). In addition, host plants that provide breeding locations and food for caterpillars would be removed by clearing the 40-foot-wide corridor in the temporary ROW needed to construct the new pipeline. Each of the build alternatives would involve operation of heavy equipment off-road and the construction in suitable habitat for the Comstock's hairstreak, which could result in injury to or death of individuals of this species, if present. Surveys have not been done to determine whether this species occurs in the project area; therefore, this project may result in direct impacts to the Comstock's hairstreak.

If host plants were removed or revegetated at lower densities later in time, the result would be a reduction in available food and in sites available for reproduction. Therefore, implementation of any of the proposed alternatives may result in indirect impacts to the Comstock's hairstreak. The proposed project may impact individuals of Comstock's hairstreak, but is not likely to result in a trend toward federal listing or loss of viability.

g. Freeman's Agave Borer, *Agathymus baueri freemani*

The build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat on CNF land for the Freeman's agave borer (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Additionally, host plants that provide breeding locations and food for caterpillars would be removed by clearing the temporary construction ROW. Operation of heavy equipment off-road during excavation and construction in suitable habitat for the Freeman's agave borer (necessary for each of the analyzed build alternatives), could result in injury to or the death of individuals of this species, if present. Surveys to determine whether this species occurs in the project area have not been done; therefore, this project may result in direct impacts to the Freeman's agave borer.

If host plants were removed or revegetated at lower densities later in time, the result would be a reduction in available food and in sites available for reproduction. Therefore, this project may result in indirect impacts to the Freeman's agave borer. The proposed project may impact individuals of Freeman's agave borer, but is not likely to result in a trend toward federal listing or loss of viability.

h. Neumogen's Giant Skipper, *Agathymus neumogeni*

The proposed project's build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat for the Neumogen's giant skipper on CNF land (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Host plants, which provide breeding locations and food for caterpillars, would be removed by clearing during construction. Off-road operation of heavy equipment and construction in suitable habitat for the Neumogen's giant skipper could result in injury to or the death of individuals of this species, if present. Surveys have not been done to determine whether this species occurs in the project area; therefore, this project may result in direct impacts to the Neumogen's giant skipper.

If host plants were removed or revegetated at lower densities later in time, the result would be a reduction in available food and in sites available for reproduction. Therefore, this project may result in indirect impacts to the Neumogen's giant skipper. The proposed project may impact individuals of Neumogen's giant skipper, but is not likely to result in a trend toward federal listing or loss of viability.

i. Hualapai Milkwort, *Polygala rusbyi*

The build alternatives for this proposed project would result in temporary disturbance of up to 18.2 acres of suitable habitat on CNF land for the Hualapai milkwort (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). Operating heavy equipment off-road during excavation and the construction of a pipeline in suitable habitat for the Hualapai milkwort, could result in injury to or death of individuals of this species, if present. This species is not likely to occur in the project area, although surveys have not been done to determine presence or absence [#22]. Therefore, implementation of any of the build alternatives may result in direct impacts to the Hualapai milkwort.

The proposed project may impact individuals of Hualapai milkwort, but is not likely to result in a trend toward federal listing or loss of viability.

j. Tonto Basin Agave, *Agave delamateri*

The build alternatives would result in temporary disturbance of 18.2 acres of potentially suitable habitat on CNF land for the Tonto Basin agave (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). The probability of this species occurring in the project area is considered small; however, thorough species-specific surveys were not conducted. Each of the build alternatives would require operating heavy equipment off-road during excavation and the construction of a pipeline in potentially suitable habitat for the Tonto Basin agave, which could result in injury to or the death of individuals of this species, if present. Therefore, this project may result in direct impacts to the Tonto Basin agave.

The proposed project may impact individuals of Tonto Basin agave, but is not likely to result in a trend toward federal listing or loss of viability.

k. Verde Valley Sage, *Salvia dorri mearnsii*

The pipeline project build alternatives would result in temporary disturbance of up to 18.2 acres of suitable habitat on CNF land for the Verde Valley sage (Blue Alternative, 16.8; Red Alternative, 17.7; Orange Alternative, 18.2; and Yellow and Purple Alternatives, 16.3). The project would involve operating heavy equipment off-road during excavation and the construction of a pipeline in suitable habitat for the Verde Valley sage, which could result in injury to or death of individuals of this species, if present. These impacts could occur with any of the build alternatives. However, this species is not likely to occur in the project area, although surveys have not been undertaken to determine presence or absence. Therefore, this project may result in direct impacts to the Verde Valley sage.

The project may impact individuals of Verde Valley sage, but is not likely to result in a trend toward federal listing or loss of viability.

F. Management Indicator Species

i. Affected Environment

The Wildlife Specialist Report also evaluated a list of Management Indicator Species (MIS) for the project area provided by the District Wildlife Biologist at the CNF Red Rock Ranger District [#39]. Based on the presence of habitat and historical records of occurrence, it was determined that the juniper (plain) titmouse, mule deer, and pronghorn may occur within the project area.

a. Juniper (Plain) Titmouse, *Baeolophus griseus*

The juniper titmouse is associated with junipers, pinyon, and oak woodlands where this bird nests in snags and feeds on insects.

b. Mule Deer, *Odocoileus hemionus*

Mule deer are found from low deserts to high-elevation forests, often concentrated on edges of vegetation.

c. Pronghorn, *Antilocapra americana*

Within Arizona, pronghorn inhabit plains and meadows of shortgrass from deserts of the south to high plateaus of the north, preferring areas with grasses and scattered shrubs on rolling or dissected hills or mesas. However, pronghorn no longer occur in the project area.

ii. Environmental Consequences

Because the direct, indirect, and cumulative impacts of the build alternatives are similar for each of the management indicator species, they are summarized below, by species, as opposed to by alternative.

a. Juniper (Plain) Titmouse, *Baeolophus griseus*

The amount of suitable nesting and foraging habitat for the juniper titmouse that would be disturbed by any of the build alternatives is insignificant compared to the total available habitat in the surrounding area; therefore, the Blue, Red, Orange, Yellow, or Purple Alternatives would not directly, indirectly, or cumulatively affect the forest-wide population trend for the juniper titmouse. The No Build Alternative would have no direct, indirect, or cumulative impacts on the juniper (plain) titmouse or its habitat.

b. Mule Deer, *Odocoileus hemionus*

The amount of suitable habitat for the mule deer that would be disturbed by the Blue, Red, Orange, Yellow, or Purple Alternatives is insignificant compared to the total available habitat in the surrounding area; therefore, the build alternatives would not directly, indirectly, or cumulatively affect the forest-wide population trend for mule deer. The build alternatives would not impact the wildlife movement corridor associated with Jacks Canyon. The No Build Alternative would have no direct, indirect, or cumulative impact on the mule deer or its habitat.

c. Pronghorn, *Antilocapra americana*

The amount of suitable habitat for the pronghorn that would be disturbed is insignificant compared to the total available habitat in the surrounding area; therefore, the Blue, Red, Orange, Yellow, or Purple Alternatives would not directly, indirectly, or cumulatively affect the forest-wide population trend for the pronghorn. The No Build Alternative would have no direct, indirect, or cumulative impact on the pronghorn or its habitat.

G. Cultural Resources

A record search was undertaken at CNF and through AZSITE, the state's electronic inventory of cultural resources, to identify previous cultural resources investigations and previously identified resources. Approximately 76 percent (41 acres) of the project area has been previously investigated (surveyed) for cultural resources; this number correlates to the 40-foot corridors along each of the build alternative alignments and does not include staging areas, whose locations are currently unknown. Because portions of the project area have not been previously surveyed, UES would need to ensure that an intensive pedestrian survey of all previously unsurveyed portions of the project limits is performed in compliance with CNF requirements, Section 106 of the National Historic Preservation Act, and the State Historic Preservation Act. Any required site treatment on CNF lands would be coordinated with CNF, and completed prior to ground-disturbing activities. This project was included on a CNF project list, which was sent to applicable Native American tribes in 2003 and 2004. CNF meets with these tribes annually; no concerns associated with this project were identified as a result of tribal coordination.

i. Affected Environment

The records search identified 13 previously recorded cultural resource sites within the limits of, or close proximity to (200 feet), the project area. Of these 13 sites, 6 were reported as artifact scatters, 2 were documented as habitations or possible habitations, 1 was identified as a campsite, 3 had no site type recorded, and 1 was recorded as both an artifact scatter and an historic road [#40].

Four of the 13 identified cultural resource sites have been further investigated as part of the EA for the FHWA and ADOT's SR 179 proposed roadway improvements. These 4 sites were tested and determined to be not eligible for the National Register of Historic Places (NRHP) by the State Historic Preservation Office and the Forest Supervisor [#15]. Reviewed documentation regarding the 9 untreated (e.g., sites not investigated through testing and/or data recovery efforts), previously identified cultural resources sites revealed 1 artifact scatter determined to be eligible for the NRHP, and 8 sites with no information available regarding NRHP eligibility.

ii. Environmental Consequences

If any cultural resource sites were to be discovered during construction and/or clearing, UES would cease all operations immediately and contact CNF. Furthermore, all adversely impacted sites would be treated as agreed to by CNF and the State Historic Preservation Office (SHPO), prior to ground-disturbing activities. Percentages of the build alternatives surveyed for cultural resources—as discussed below and in Table II-1)—correlate to the 40-foot corridors along each of the build alternative alignments and do not include staging areas, whose locations are currently unknown.

a. Blue Alternative

Approximately 18.4 acres, or 74 percent, of the Blue Alternative have been surveyed for cultural resources. Based on the available data, the Blue Alternative would potentially directly impact at least three untreated cultural resources sites. Because this alternative would generally follow the existing SR 179 roadway inside and adjacent to the ADOT ROW, it would be unlikely to result in indirect impacts to cultural resources. The Blue Alternative would contribute to cumulative impacts to cultural resources; however, any future actions occurring on federal or state lands will be required to comply with the National Historic Preservation Act and will require consultation with applicable land managing agencies and/or the State Historic Preservation Office. Therefore, the Blue Alternative would have a minor cumulative impact on cultural resources.

b. Red Alternative

Approximately 14.2 acres, or 54 percent, of the Red Alternative have been surveyed for cultural resources. Based on the available data, this alternative would potentially directly impact at least three previously untreated cultural resources sites. This alternative would generally follow the Bell Rock Pathway and an existing overhead Qwest line, and could be used as an informal trail in portions of the alignment not sharing the same alignment as existing pathways. The Red Alternative could indirectly provide visitors venturing off

established trails easier access to currently unidentified cultural resources sites, which could result in disturbance. Therefore, the Red Alternative could have minor indirect impacts to cultural resources. This alternative would contribute to cumulative impacts to cultural resources; however, as with the Blue Alternative, the cumulative effects within the Sedona area are considered to be minor.

c. Orange Alternative

Approximately 16.3 acres, or 61 percent, of the Orange Alternative have been surveyed for cultural resources. Based on available data, the Orange Alternative would potentially directly impact at least two previously untreated cultural resources sites. Portions of this alignment could be used as an informal trail, which could result in minor indirect impacts to currently unidentified cultural resources. As with the other build alternatives, the Orange Alternative would constitute a minor contribution to the cumulative impacts on cultural resources.

d. Yellow Alternative

Approximately 18.4 acres, or 73 percent, of the Yellow Alternative have been surveyed for cultural resources. Based on available data, this alternative would potentially directly impact at least two previously untreated cultural resources sites. This alignment would be constructed as a formal trail, providing easier access to areas within the CNF. Because this trail would be formalized, greater numbers of users would be expected on this pipeline alignment than would be the case with the other build alternatives. Trail users straying from the designated path could disturb unrecorded cultural resources; therefore the Yellow Alternative could result in minor indirect impacts to currently unidentified cultural resources. As with the other build alternatives, the Yellow Alternative would constitute a minor contribution to cumulative impacts on cultural resources in the Sedona area.

e. Purple Alternative

Approximately 18.4 acres, or 73 percent, of this alternative have been surveyed for cultural resources. Based on available data, this alternative would potentially directly impact at least two previously untreated cultural resources sites. This alignment would be located adjacent to the new southbound SR 179 (as assumed under this alternative); because this alignment would be within ADOT ROW, little disturbance would be expected on nearby unrecorded cultural resources; therefore the Purple Alternative would result in negligible indirect impacts to currently unidentified cultural resources. As with the other build alternatives, this alternative would have a minor contribution to cumulative impacts on cultural resources in the Sedona area.

f. No Action Alternative

No ground disturbing activities would occur under this alternative; therefore implementation of the No Action Alternative would have no direct, indirect, or cumulative impacts to cultural resources.

H. Scenic Resources

A scenic resources impact assessment has been prepared to determine the potential scenic impacts from the proposed installation of a natural gas pipeline from the Village of Oak Creek to Sedona on private and CNF lands. This assessment is a qualitative analysis between existing conditions and postproject conditions of landscape character, overall scenic integrity, landscape visibility, and compliance with the CNF Forest Plan (#5).

The project area lies within Arizona's Red Rock country and is characterized by eroded monuments, promontories, cliffs, and buttes of red sandstone. Numerous prominent landmarks are visible from the project area, including Bell Rock, Courthouse Butte, and Cathedral Rock. The rolling terrain in the pinyon-juniper forest provides a variety of visual experiences and panoramic views of the rock formations.

As a part of a public road system on National Forest lands, SR 179 currently serves as an "entry corridor" to the Sedona area of the CNF. The State of Arizona's Parkways, Historic and Scenic Roads Advisory Committee designated SR 179 as the Red Rock Scenic Road from MP 302.5 to MP 310.0, which is within the project area.

The Forest Service established a Visual Management System (VMS) in 1974 to inventory, evaluate, and manage scenic resources. The VMS is described in Agriculture Handbook #462 and entitled *National Forest Landscape Management*, Volume 2, Chapter 1, dated April 1974. Visual quality objectives (VQO) are assigned to the landscape to describe the degree of acceptable alteration of the natural landscape. The VQO classifications are Preservation, Retention, Partial Retention, Modification, and Maximum Modification. Preservation allows for ecological changes only, while Maximum Modification allows for landscape changes that may dominate the natural landscape character (#41).

The VMS process has been updated as the Scenery Management System (SMS), which has been incorporated into respective Forest Management Plans and is outlined in detail in *Landscape Aesthetics: A Handbook for Scenery Management* (#42). Full adoption of the SMS is to occur as each National Forest revises its land and resource management plan. For Forests not currently undergoing the forest plan revision process, or for those requiring extensive time for revision, application of the SMS will occur at the sub-Forest or project level.

The SMS has not been formally integrated into CNF management direction because the current Forest Plan for the CNF predates the 1995 SMS. Until the CNF Forest Plan is revised, the VMS will continue to be used for inventorying, evaluating, and managing scenic resources on the CNF. Because the Forest Plan revision process for the CNF has not yet begun, this scenic impact assessment can determine consistency with the SMS only on a relative basis.

Scenic Integrity Levels (SILs) are used in the SMS much the same way as VQOs and are classified as very high, high, moderate, low, and very low. SMS also considers landscape visibility, which addresses

travelways and use areas, concern levels, and distance zones⁴. Travelways include linear viewing platforms such as highways and trails. Use areas are locations that have concentrated public viewing use such as trailheads, campgrounds, subdivisions, and commercial areas.

i. Affected Environment

At the southern end of the project area, the commercial and residential development of the Village of Oak Creek dominates the setting. The presence and visibility of the development notably lowers the level of integrity of the landscape because of the contrast created by the different materials, colors, and texture of the buildings; varying architectural styles, presence, and size of the numerous directional and information signs; and the more intensive roadway systems that are prominent features in the landscape and attract attention away from the natural features. The adjacent red rock formations, specifically Bell Rock, and distant mesas form a distinct and unique backdrop to the community. These formations are visible from aerial views or from on-the-ground vantage points.

Between the Village of Oak Creek and the northern limit of the project area, the landscape is part of the renowned Red Rock country, with spectacular panoramic views of eroded monuments, promontories, cliffs, and buttes. The rolling terrain in the pinyon-juniper forest provides a variety of visual experiences and offers continuously changing sequences of panoramas of the rock formations. Numerous prominent features are visible from aerial views or from on-the-ground vantage points, and include Bell Rock, Courthouse Butte, and Cathedral Rock. The contrast created between the red rocks and soil and the gray-green pinyon-juniper forest enhances the visual variety of the landscape in terms of color, texture, and form.

From an aerial perspective, the landscape is coarse-textured and has a vegetation pattern that varies from dense to sparse areas of trees and shrubs that range from dark evergreen to gray-green. The orange-red soil color contrasts with the vegetation to create a mottled appearance to the land surface. The large sandstone formations have a smooth appearance, with vegetation dotting the surface of the rocks in a random, irregular pattern.

The *Coconino National Forest Land and Resource Management Plan* (#5) has adopted a VQO of Retention (only permitted landscape changes are those not evident to the casual observer) for National Forest lands within the project area. However, the goal of Retention has not currently been achieved on portions of SR 179 within CNF land in the project area because of visible modifications to the landscape created by the roadway (cut slopes). In such cases where the existing condition does not meet the goal of Retention, the long-term CNF objective is to move such landscapes up to Retention by either natural healing or by taking actions to rehabilitate those lands to improve the visual conditions. The application of the VQO applies only to National Forest lands.

⁴ The VMS defines distance zones as the distance from which a landscape is viewed as foreground, middleground, and background. For this project, distance zones refer to the distance from the highway or trail to the proposed pipeline alignment. Distance zones are important in evaluating how change is perceived in the landscape because the closer the features in the landscape are to the viewer, the more pronounced they appear and the greater detail is observed. The distance zones were classified as immediate foreground (0 to 300 feet), foreground (300 feet to 0.5 miles), middleground (0.5 to 4.0 miles), and background (greater than 4.0 miles).

The VQO of Retention corresponds to the SIL of High Scenic Integrity. High Scenic Integrity refers "... to landscapes where the valued landscape character 'appears' intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident" (#42).

SR 179 and the surrounding National Forest lands have a high volume of use by people who have a major concern for scenic qualities. The SR 179/Red Rock Scenic Road corridor and the Bell Rock Pathway are considered by the Forest Service as Level 1 or highest sensitivity classification in terms of the VMS. Because of the notoriety of the Red Rock country and the number of local, regional, national, and international visitors to the area, a moderate (Level 2) concern level is assumed for the remaining designated trails in the vicinity of the project area.

ii. Environmental Consequences

The travelways and use areas analyzed are shown on Figure III-1 and include the Bell Rock Pathway, Templeton Trail, Bell Rock Trail, H.T. Trail, Little Horse Trail, and the SR 179/Red Rock Scenic Road. Three specific viewpoints were evaluated from both the north and south confluences of Bell Rock Pathway and Courthouse Loop Trail, and the confluence of Bell Rock Pathway and Big Park Loop Trail. In addition, potential impacts to the CNF visitor who is not on a designated trail or on SR 179 and to the landscape from an aerial perspective were also considered.

A visibility analysis identified all areas along the existing SR 179 and designated trails where the pipeline would be visible *if there were no vegetation* to screen the pipeline within the CNF. The analysis reflects the worst-case scenario in determining the potential scenic impacts. Existing vegetation would substantially help to minimize the impacts to the scenic resources by screening views to and from the trails and other use areas. The visibility of the proposed pipeline was not evaluated in the Village of Oak Creek or in the small portion in the CNF that lies in the southernmost limit of the project area and is described in Section G below.

a. Blue Alternative

The magnitude of change in the landscape character created by the construction of the Blue Alternative would be a substantial short-term adverse impact because ground-disturbing activities would remove existing vegetation, expose soil from grading and grubbing activities during construction, and lower the scenic attractiveness of the immediate foreground area of the highway. The long-term impacts would be considered subtle-to-notable adverse impacts. The disturbed area would occur on only one side of the roadway corridor, and the revegetated materials would mature and cover the exposed earth and soften any minor grading effects that would have occurred during construction. A notable change in spatial enclosure⁵

⁵ Spatial enclosure relates to the degree of openness or closeness that can be created by vegetation, structures, or landforms or the lack thereof. For example, a canyon usually has a high degree of spatial enclosure, while prairies have a low degree of spatial enclosure.

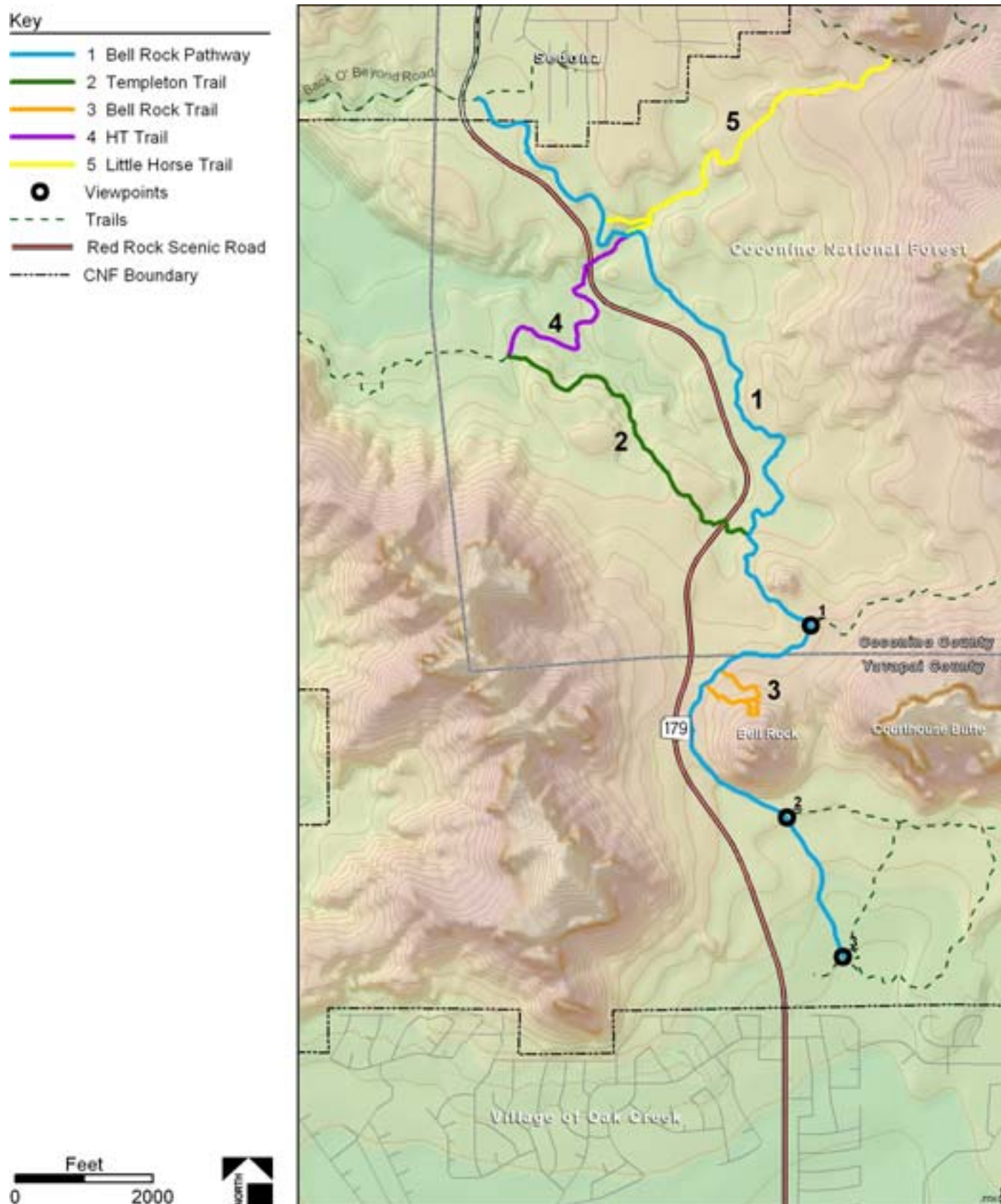


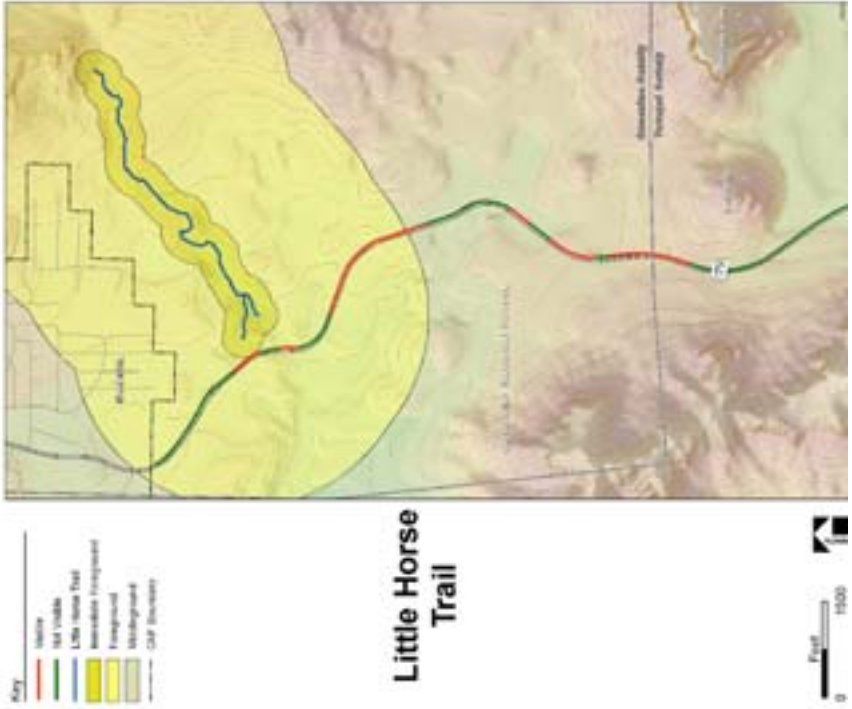
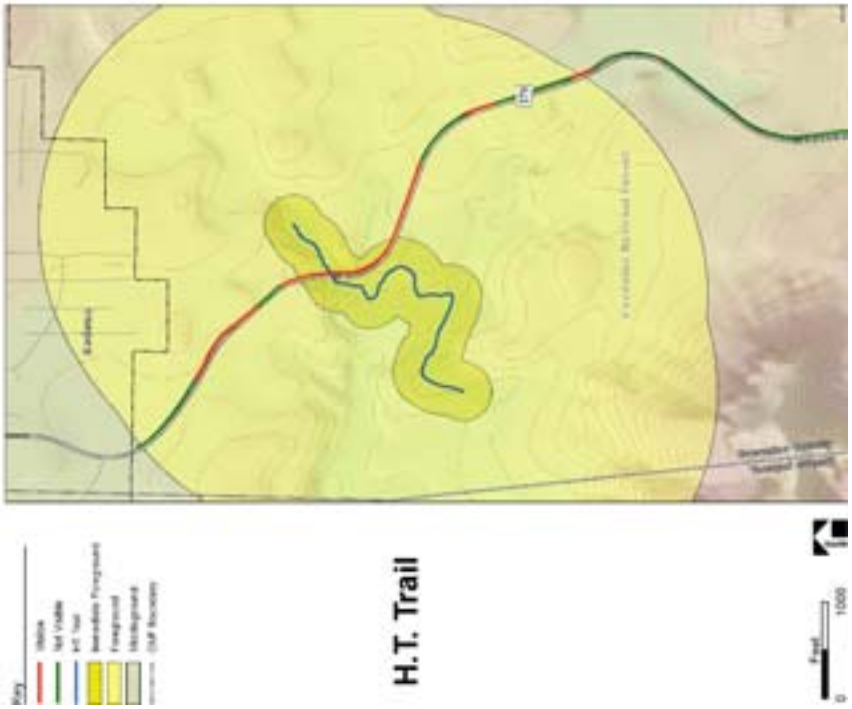
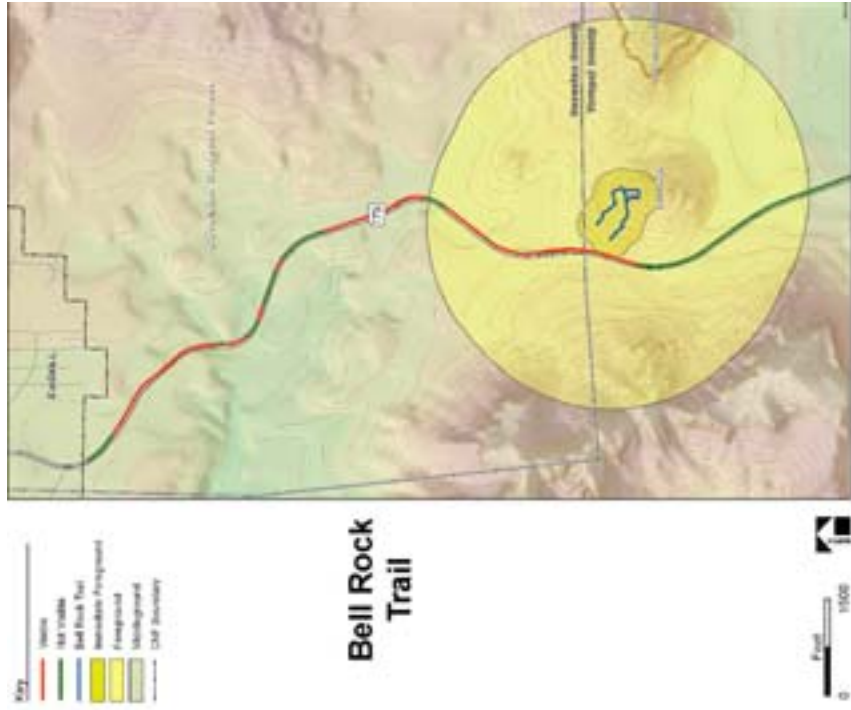
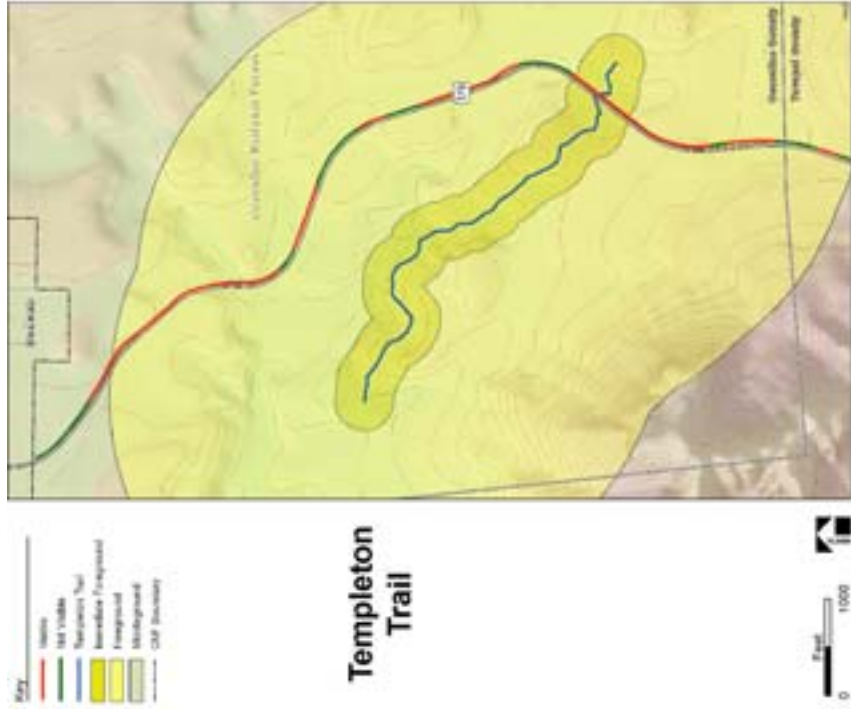
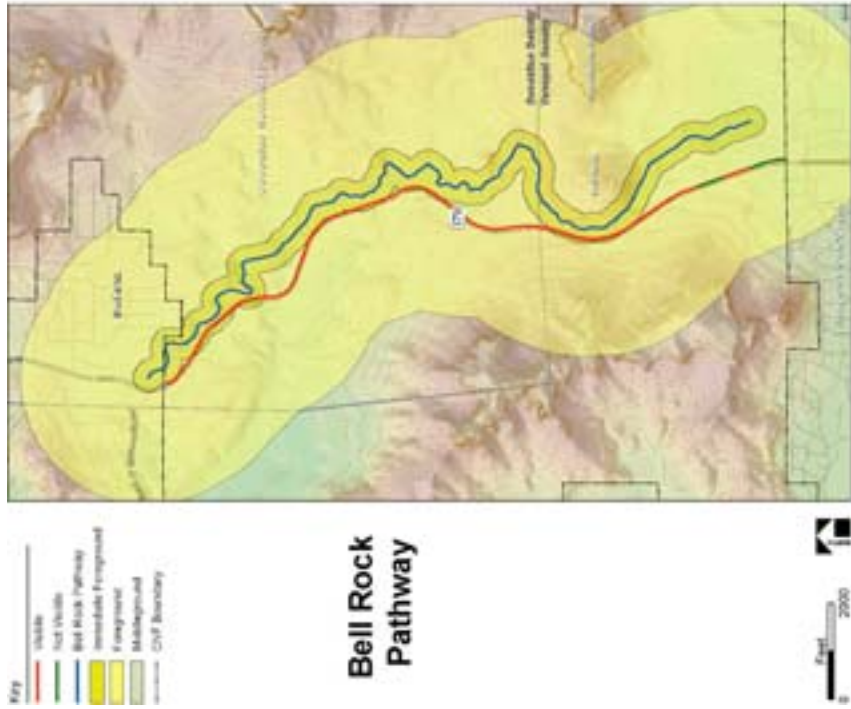
Figure III-1. Designated Travelways and Use Areas

would remain because the width of the current ROW is not sufficient to plant trees and large shrubs between the roadway's errant vehicle clear zone (30 feet from edge of travelway) and the 10-foot maintenance area to recreate the current senses of spatial enclosure. The lack of trees and large shrubs within the 10-foot maintenance area may be acceptable to Forest visitors and motorists because the maintenance area would appear to be part of the already-disturbed corridor created by the roadway. In addition, the existing views from SR 179 to the red rocks would not be reduced and there might be increased opportunity to view the surrounding terrain because of the removal of trees and large shrubs.

View from Designated Trails. Portions of the Blue Alternative would be visible by trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails (Figure III-2). Of the approximately 20 miles of Alternative that would lie collectively within the trails' three distance zones, approximately 9 miles of the proposed pipeline alignment would be visible from the trails. Within the immediate foreground area of Bell Rock Pathway, the pipeline alignment would be highly visible along 0.9 miles of the 3.6-mile long Pathway. Visibility from three specific viewpoints was evaluated: the confluence of the Bell Rock Pathway with Courthouse Loop Trail (two locations) and the Bell Rock Pathway and the Big Park Loop Trail. The Blue Alternative would not be visible in the immediate foreground or middleground area from these three viewpoints. Approximately 38 percent of the Blue Alternative would be visible in the foreground area of the north confluence with Bell Rock Pathway and Courthouse Loop Trail and 9 percent of the alignment would be visible from the confluence with Bell Rock Pathway and the Big Park Loop Trail.

View from the Project Area. Within a 0.5-mile radius of the alternative, the majority of the Blue Alternative would be highly visible (Figure III-3). From an aerial perspective, the Blue Alternative would have a notable adverse short-term effect on the landscape from the clearing of vegetation and exposure of soil that would be apparent. Once revegetated material would mature and the soil becomes covered with grasses or other types of vegetation, the long-term effect would be considered a subtle adverse impact because the 10-foot maintenance area within the SR 179 corridor would not be readily apparent from an aerial perspective.

View from Existing SR 179 Corridor. The Blue Alternative could have short- and long-term notable adverse impacts on motorists driving along SR 179/Red Rock Scenic Road and on trail users. Before the revegetated materials would become established, the cleared area could create opportunities where visitors would pull-off their vehicles and park within the highway ROW to gain access to the CNF. This could result in trampling of vegetation and additional resource damage, which would lower the area's scenic attractiveness and level of scenic integrity (or naturalness). Since the distance from the edge of the roadway to the pipeline maintenance area is relatively short, keeping visitors from parking in the 10-foot maintenance area would also be problematic and would continue to provide the opportunity for unauthorized parking. Almost all of the Blue Alternative within the immediate foreground area of the new southbound SR 179 roadway would be visible, but the proposed pipeline alignment would be substantially less visible (less than 50 percent) when the north- and southbound roadways are greater than 300 feet apart.



*SR 179 Not Applicable

Figure III-2. Visibility Characteristics of the Blue Alternative

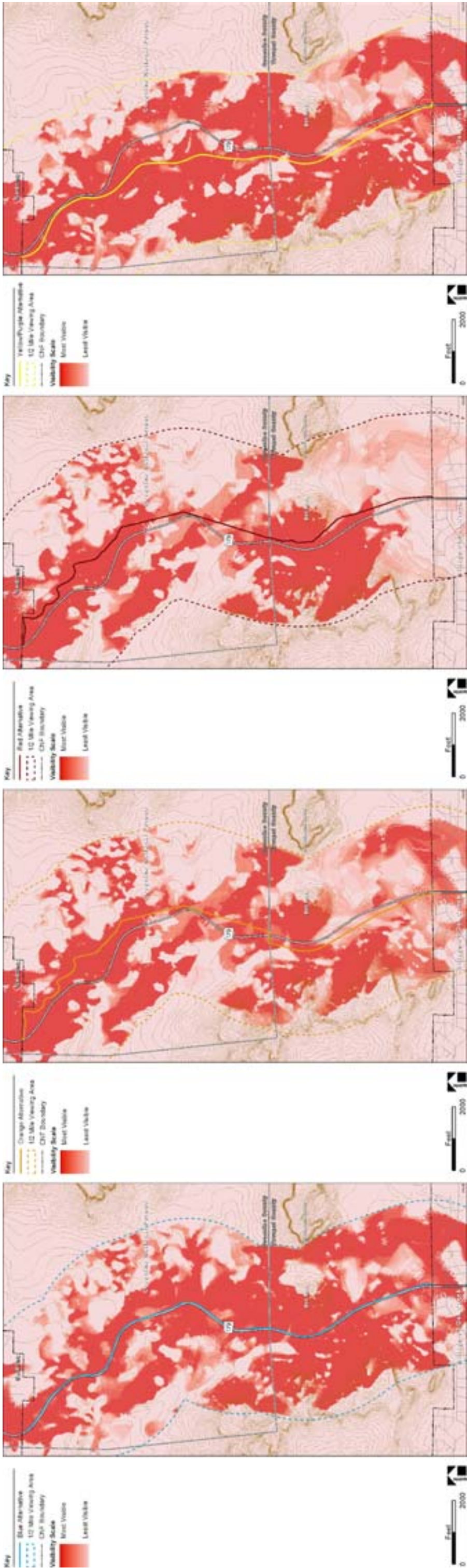


Figure III-3. Range of Visibility within 0.5-mile Radius of the Build Alternatives

Cumulative Impacts. Cumulative impacts on scenic resources include the extent of the area from which the project area would be visible. The project area is visible from the Village of Oak Creek (both residential and commercial areas of the Village of Oak Creek) and portions of the city of Sedona (Sky Mountain, Chapel of the Holy Cross, and several residential areas). Past, present, and reasonably foreseeable projects that could cumulatively affect scenic resources include new improvements to SR 179, expansion of the existing Bell Rock North Trailhead, and the construction of two new and three potential scenic pullouts along SR 179.

There would be a substantial change in the landscape character from the construction of the new improvements to SR 179, the expansion of the existing Bell Rock North Trailhead, and the construction of the five scenic pullouts. There would be a change in the existing northbound travel experience from a relatively narrow, winding roadway to a wider, more open, two-lane roadway through the pinyon-juniper forest. The change in scenic quality would vary, depending on the magnitude of the landscape modifications (cut and fill slopes) associated with the roadway improvements. The magnitude of change in scenic attractiveness of the landscape would range from minor to major adverse short-term and long-term impacts for the majority of the roadway between the Village of Oak Creek and the city of Sedona in the immediate foreground and foreground area of the four-lane divided highway and scenic pullouts. The middleground and background views would be less impacted.

Compliance with Visual Quality Objectives/Scenic Integrity Levels. The existing VQO for the project area within the CNF is Retention. However, the VQOs for the landscape within the foreground area of SR 179 range from Retention to Modification/High to Low Scenic Integrity Levels depending on the modifications to the land that have been created by the roadway. Long term, the construction of the Blue Alternative would result in activities that would not meet the Retention or High Scenic Integrity Level goals because the pipeline would be a part of the highway corridor and the landscape in the corridor would not appear to be intact. The Blue Alternative would not lower the existing achieved VQOs/SILs in the long term.

b. Red Alternative

The magnitude of change in the landscape character created by the construction of the Red Alternative would be a substantial short-term adverse direct impact because ground-disturbing activities would remove or trample existing vegetation and expose soil from grading and grubbing activities during construction. The Red Alternative would share the same alignment with the Bell Rock Pathway for approximately 1.3 miles, which would directly lower the scenic attractiveness of that portion of the Bell Rock Pathway.

The long-term direct impacts created by the Red Alternative would be considered notable-to-major adverse impacts. As the revegetated materials would mature and cover the exposed earth, they would soften any minor grading effects that would have occurred during construction. The lack of trees and large shrubs within the 10-foot maintenance area would have a substantial visual effect along the Red Rock Pathway where the existing trail and proposed pipeline are coincident. Specifically, there would be areas of the trail that are less than 10 feet wide and the portions of the trail that have a high spatial enclosure created by

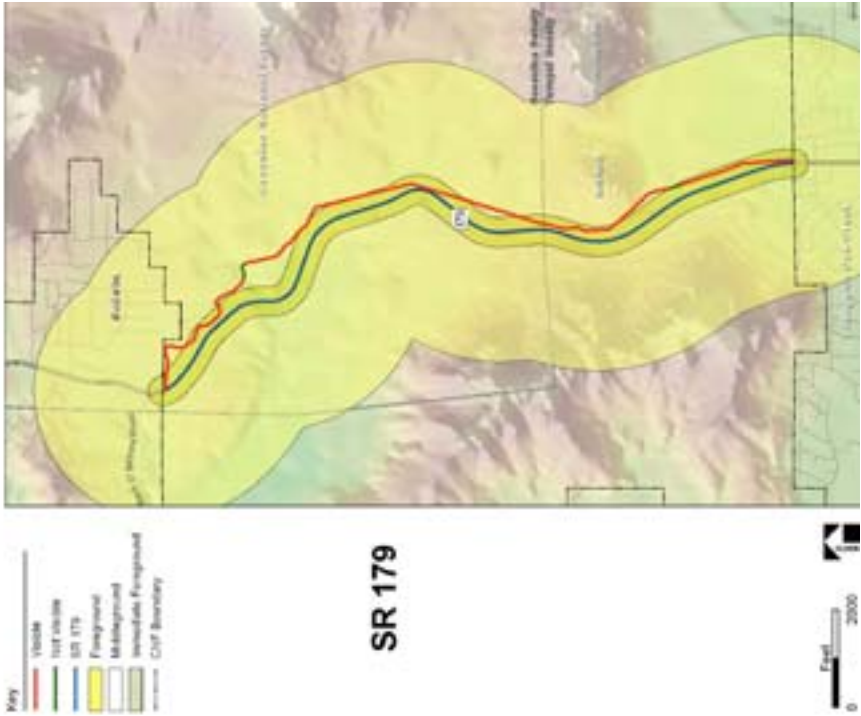
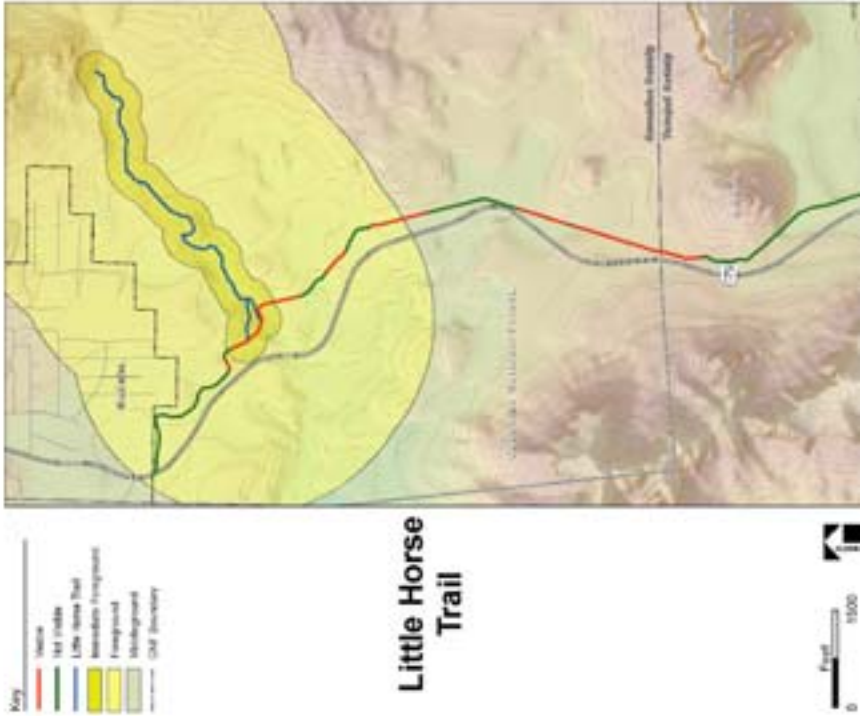
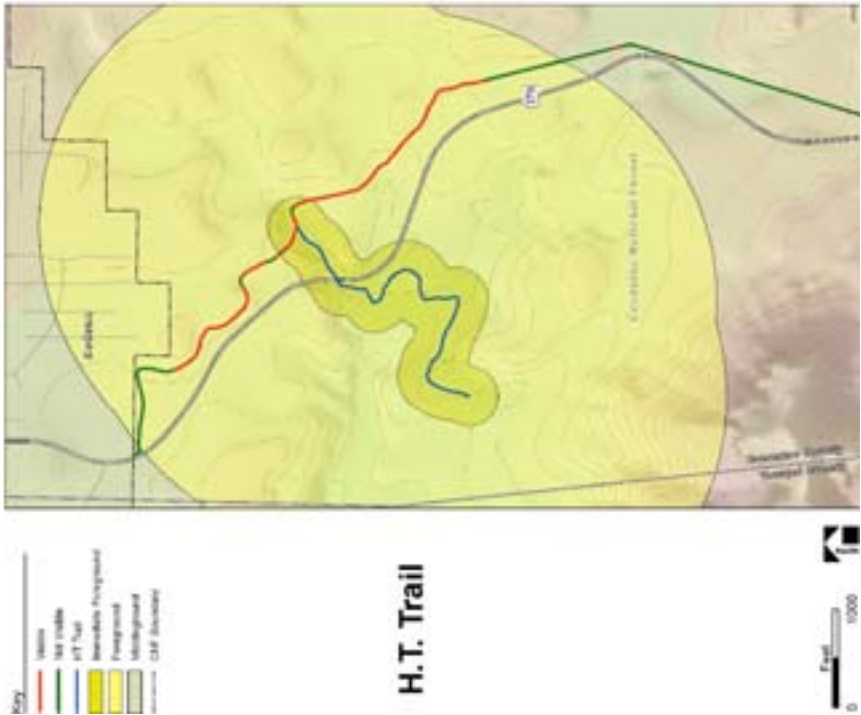
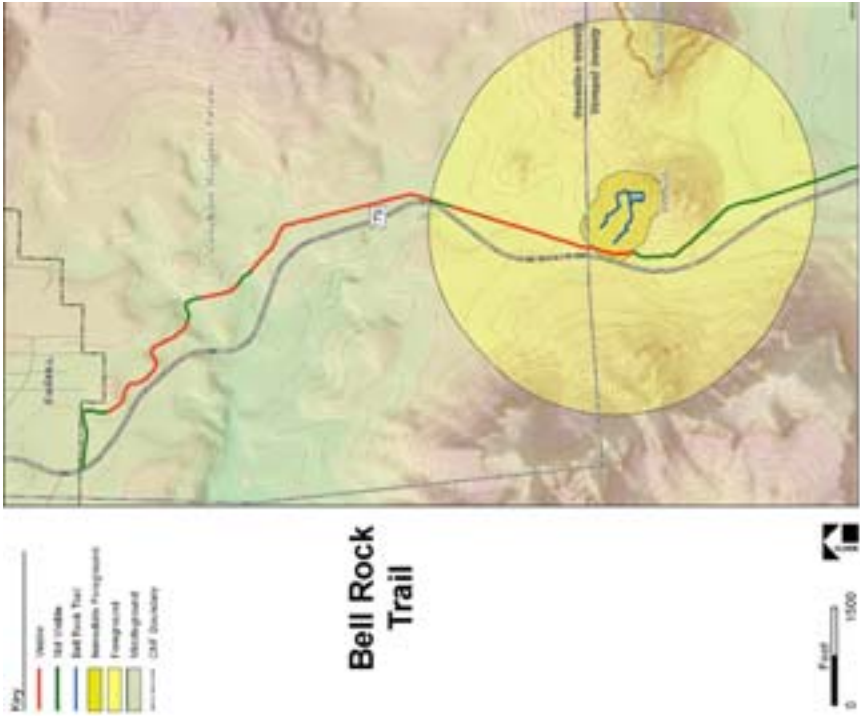
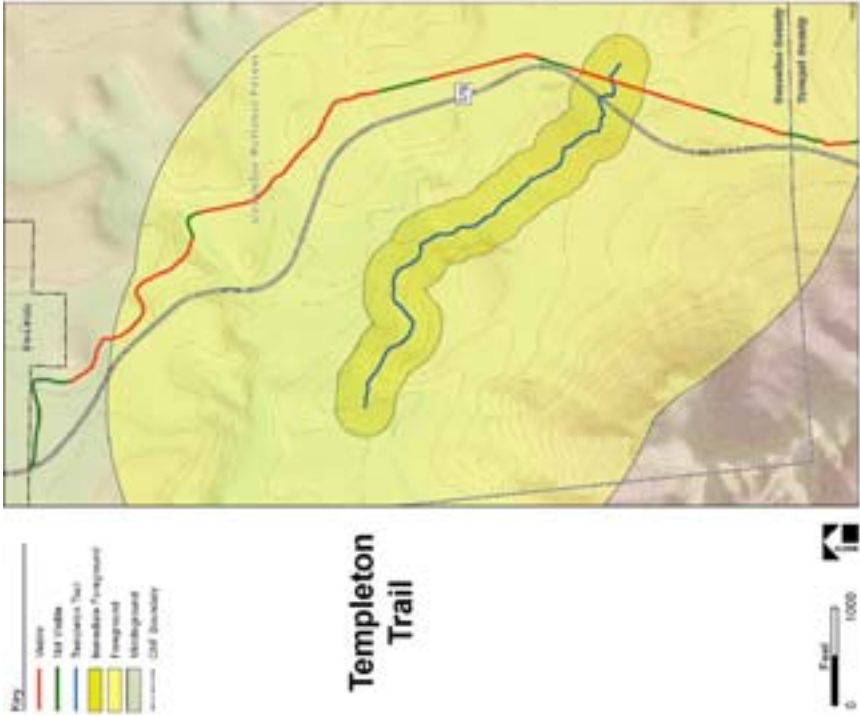
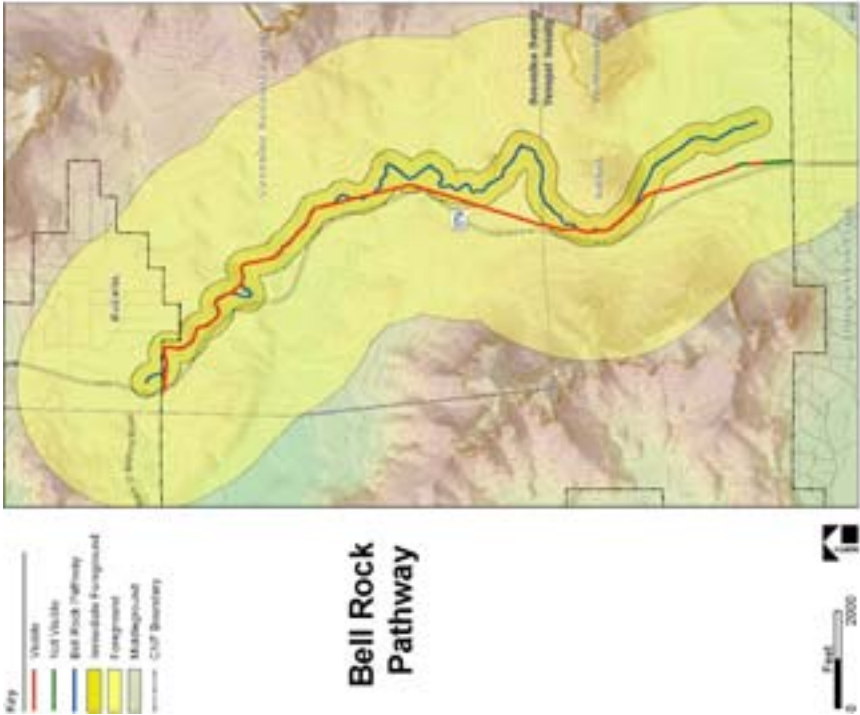


Figure III-4. Visibility Characteristics of the Red Alternative

mature trees and large shrubs. Another substantial effect would be in the approximately 0.75 mile of immediate foreground area of the Red Rock Pathway where there are visible slopes greater than 18 percent. The construction of the proposed pipeline would result in an appreciable impact on the landscape and would substantially lower the level of naturalness and scenic attractiveness. A major adverse impact would result from the construction of the Red Alternative, because it would traverse the base of Bell Rock. Constructing the proposed pipeline through the rock formation would create changes in the landform that would be clearly detectable and would be extremely difficult to mitigate.

View from Designated Trails. Portions of the Red Alternative would be visible for trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails (Figure III-4). Of the approximately 21.5 miles of alternative that would be located collectively within the trails' three distance zones, approximately 11.8 miles would be visible. Within the immediate foreground area of Bell Rock Pathway, the pipeline alignment would be highly visible along 2.2 miles of the 3.6-mile long Pathway.

The Red Alternative would not be visible in the immediate foreground or middleground area from the three trail confluence viewpoints. It would be least visible from the south confluence of the Bell Rock Pathway and Courthouse Loop Trail than from the other two viewpoints. Approximately 23 percent of the Red Alternative would be visible in the foreground area of the north confluence with Bell Rock Pathway and Courthouse Loop Trail, and 18 percent would be visible at the confluence with Bell Rock Pathway and the Big Park Loop Trail. The Red Alternative could have short- and long-term notable adverse indirect impacts on the portions of the alignment that would not be coincident with the Bell Rock Pathway. Before the revegetated materials would become established, the cleared area that is not along the pathway could create opportunities where informal trails could be created. This could result in trampling of vegetation and additional resource damage, which would lower the area's scenic attractiveness and level of scenic integrity.

View from Project Area. Within the 0.5-mile radius, the Red Alternative would appear to be the least visible when compared to the other build alternatives (Figure III-3). Similar to the Blue Alternative, the Red Alternative would have a notable adverse short-term effect on the landscape from the clearing of vegetation and exposure of soil that would be apparent from an aerial perspective. Once revegetated materials would mature and the soil would become covered with grasses or other types of vegetation, the long-term effect of the Red Alternative would be considered a subtle adverse impact. The 10-foot maintenance area within the SR 179 corridor would not be readily apparent from the aerial perspective: the alignment follows existing areas of disturbance created either by the existing Bell Rock Pathway or by the utility corridor. For the portion of the alignment coincident with the Bell Rock Pathway, the maintenance area would be 8-feet instead of 10 feet and would have less of a footprint on the landscape along the pathway.

View from Existing SR 179 Corridor. In the immediate foreground of the SR 179/Red Rock Scenic Road, 70 percent of the Red Alternative would be seen for 80 percent of the time (Figure III-4). Visibility from the foreground of SR 179 (94 percent of the Alternative) would be notably greater than the immediate foreground, but less in duration (65 percent of the time) from the highway. The Red Alternative would not be seen in the middleground of SR 179.

Cumulative Impacts. The area potentially impacted in terms of cumulative impacts and the past, present, and reasonably foreseeable projects that could cumulatively affect scenic resources would be the same as for the Blue Alternative. The cumulative impacts noted with the Blue Alternative would also be the same for the Red Alternative, with the exception of the cumulative visibility from the five designated trails in the project area and the visibility from the new southbound SR 179 travel lanes. Portions of the red alternative would be visible for 64 percent of the time for trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails. Of the approximately 21.5 miles of alternative that would be located within the three distance zones, approximately 11.8 miles would be visible. The Red Alternative would be less visible from the new southbound SR 179 roadway than the Blue Alternative.

Compliance with Visual Quality Objectives/Scenic Integrity Levels. As previously noted, the existing VQO for the project area within the CNF is Retention. Long term, the construction of the Red Alternative would result in some areas of the immediate foreground of the Red Rock Pathway that would not meet the Retention or High Scenic Integrity Level goals because the proposed pipeline would destroy a portion of the base of Bell Rock and because of the amount of landscape modification required in areas of steep slopes.

c. Orange Alternative

Similar to the Blue and Red Alternatives, the magnitude of change in the landscape character created by the construction of the Orange Alternative would be a substantial short-term adverse direct impact because ground-disturbing activities would remove or trample existing vegetation and expose soil from grading and grubbing activities during construction. The Orange Alternative would share the same alignment with the Bell Rock Pathway for approximately 1.0 mile, which would directly lower the scenic attractiveness of that portion of the Bell Rock Pathway. The proposed pipeline alignment for this alternative purposely avoids any impact to Bell Rock and crosses to the west side of SR 179 just north of the landmark. The southern portion of the Orange Alternative would follow along the southbound alignment of the new SR 179 before crossing the highway to continue through the Village of Oak Creek. The level of naturalness of this area and the scenic attractiveness would be substantially lowered from the existing conditions in the short term in this portion of the project area.

View from Designated Trails. The long-term direct impacts in the northern portion of the Orange Alternative would be considered notable to substantial adverse impacts, similar to the Red Alternative along the Bell Rock Pathway. Within the immediate foreground area of Bell Rock Pathway, the pipeline alignment would be highly visible along 1.5 miles of the 3.6-mile long Pathway. In the southern portion of the Orange Alternative, the 10-foot maintenance area would create a linear form and pattern not currently present in the landscape. Another substantial effect would be in the relatively small portion of the Orange Alternative's alignment (approximately 0.02 mile) in the immediate foreground area (within 300 feet) of the Red Rock Pathway, where there would be visible slopes greater than 18 percent. The construction of the proposed pipeline would result in a clearly detectable impact on the landscape and would lower the level of naturalness and scenic attractiveness.

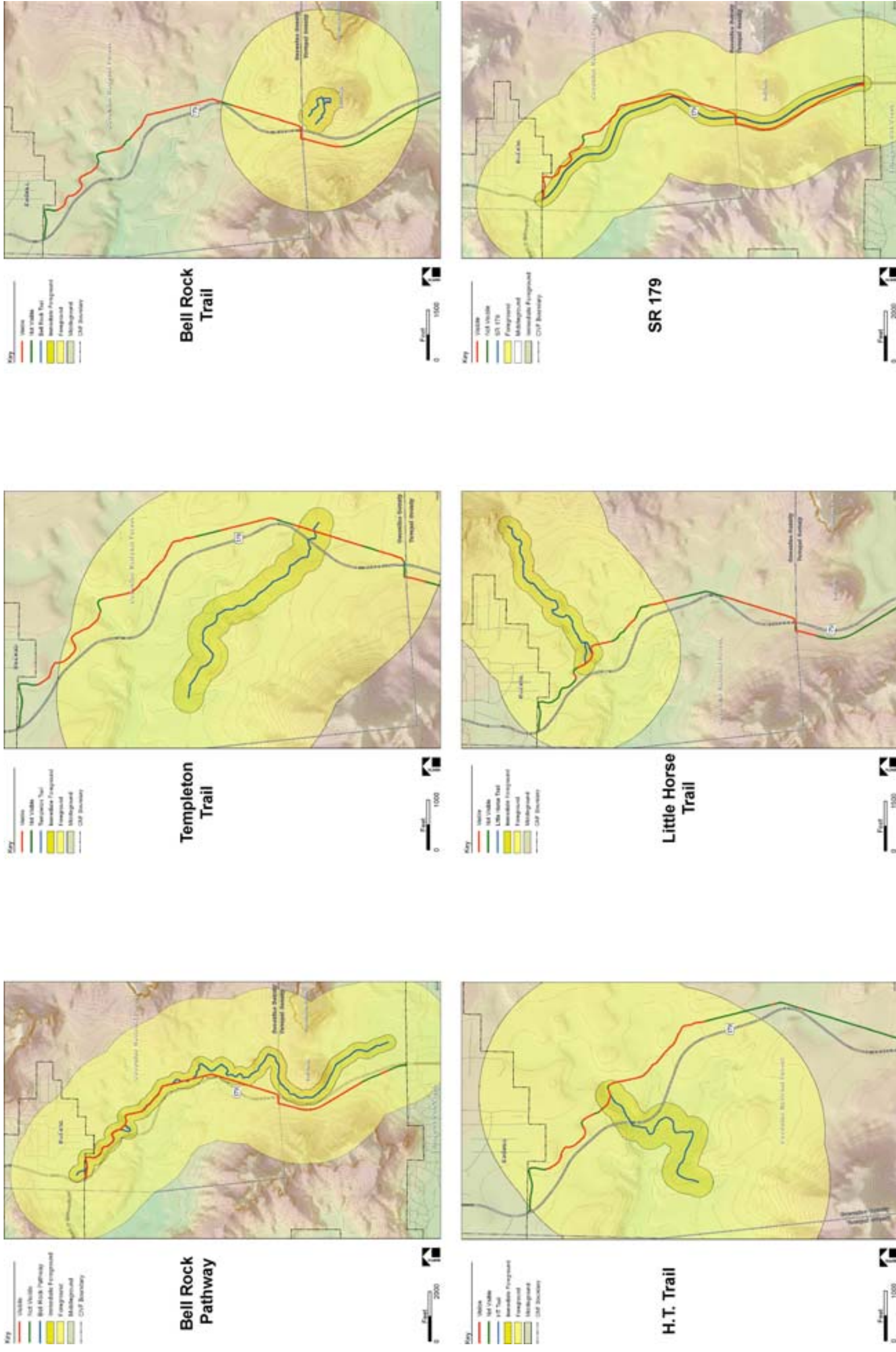


Figure III-5. Visibility Characteristics of the Orange Alternative

Draft Environmental Assessment: Natural Gas Pipeline SR 179 (Village of Oak Creek to Sedona)

Portions of the Orange Alternative would be visible for 55 percent of the time for trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails (Figure III-5). Of the approximately 22.2 miles of alternative that would be located collectively within the trails' three distance zones, approximately 11.4 miles would be visible.

Similar to the Blue and Red Alternatives, the Orange Alternative would not be visible in the immediate foreground or middleground area from the three trail confluence viewpoints. It would be least visible (6 percent) from the confluence with Bell Rock Pathway and the Big Park Loop Trail than from the other two viewpoints. Approximately 48 percent of the Orange Alternative would be visible in the foreground area of the north confluence with Bell Rock Pathway and Courthouse Loop Trail, and 10 percent would be visible at the south confluence of the Bell Rock Pathway and Courthouse Loop Trail.

View from Project Area. The southern portion of the Orange Alternative would be less visible within a 0.5-mile radius than the northern portion (Figure III-3). In the northern portion of this alternative, it appears that the visibility would substantially diminish near the 0.5-mile limit. Similar to the Blue and Red Alternatives, the Orange Alternative would have a notable adverse short-term effect on the landscape from the clearing of vegetation and exposure of soil that would be apparent from an aerial perspective. The 10-foot maintenance area within the SR 179 corridor would be readily apparent from the aerial perspective in the southern portion of the Orange Alternative. However, this area has a more open vegetation pattern and would be less discernible than if the vegetation were denser.

The Orange Alternative could have short- and long-term notable indirect adverse impacts on the portions of the alignment that would not be coincident with the Bell Rock Pathway and in the southern portion of the alternative alignment. Before the revegetated materials would become established, the cleared area that is not along the pathway could create opportunities where informal trails could be created. There are no designated trails along the west side of SR 179. The presence of the 10-foot maintenance area could also create informal trails. This could result in trampling of vegetation and additional resource damage, which would lower the area's scenic attractiveness and level of scenic integrity.

View from Existing SR 179 Corridor. In the immediate foreground of the SR 179/Red Rock Scenic Road, 80 percent of the Orange Alternative would be visible for 77 percent of the time (Figure III-5). Visibility from the foreground of SR 179 (87 percent of the alternative) would be similar to that in the immediate foreground, but less in duration (56 percent of the time) from the highway. The Orange Alternative would not be visible in the middleground of SR 179.

Compliance with Visual Quality Objectives/Scenic Integrity Levels. The area potentially impacted in terms of cumulative impacts and the past, present, and reasonably foreseeable projects that could cumulatively affect scenic resources is the same as for the Blue Alternative. The cumulative impacts noted with the Blue and Red Alternatives would also be the same for the Orange Alternative except for the visibility from the new southbound SR 179 travel lanes. The Orange Alternative would be less visible than either the Blue or Red Alternatives from the southbound roadway.

Compliance with Visual Quality Objectives/Scenic Integrity Levels. As previously noted, the existing VQO for the project area within the CNF is Retention. Long term, the construction of the Orange Alternative would result in some areas of the immediate foreground of the Red Rock Pathway that would not meet the Retention or High SIL goals because of the amount of landscape modification required in areas of steep slopes. The goals would also not be met in the southern portion of the Orange Alternative where the permanent 10-foot-wide ROW would not conform to the line, form, color, texture, and pattern common to the existing landscape character.

d. Yellow Alternative

The Yellow Alternative would follow along the southbound alignment of the new SR 179 before crossing the northbound travel lanes to continue through the Village of Oak Creek, but assumes that the new highway would not be built in the foreseeable future. The magnitude of change in the landscape character created by the construction of the Yellow Alternative would be a substantial direct adverse impact in the short term. The ground-disturbing activities would remove or trample existing vegetation and expose soil from grading and grubbing activities during construction. The level of naturalness of this area and the scenic attractiveness would be substantially lowered from the existing conditions in the short term.

The majority of the long-term impacts from the Yellow Alternative would be considered subtle-to-substantial direct adverse impacts. As the revegetated materials would mature and cover the exposed earth, they would soften any minor grading effects that would have occurred during construction. A substantial adverse effect would occur where the relatively small portion of the Yellow Alternative's alignment (approximately 0.09 mile) would have visible slopes greater than 18 percent. The construction of the proposed pipeline would result in a clearly detectable impact on the landscape and would lower the level of naturalness and scenic attractiveness.

View from Designated Trails. Portions of the Yellow Alternative would be visible for 64 percent of the time for trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails (Figure III-6). Of the approximately 18.6 miles of Alternative that would be located collectively within the trails' three distance zones, approximately 8.6 miles would be visible. Within the immediate foreground area of Bell Rock Pathway, the pipeline alignment would be highly visible along 0.2 miles of the 3.6-mile long Pathway. The visibility of the pipeline would be from only the most northern segment (0.8 mile) of the Pathway.

View from Project Area. The Yellow Alternative would have similar areas of high and low visibility, as would the Purple Alternative, but the Yellow Alternative would be less visible within a 0.5-mile radius because it would not be associated with the wider footprint of the new SR 179 northbound lanes (Figure III-3). Similar to the Blue, Red, and Orange Alternatives, the Yellow Alternative would have a notable direct adverse short-term effect on the landscape from the clearing of vegetation and exposure of soil that would be

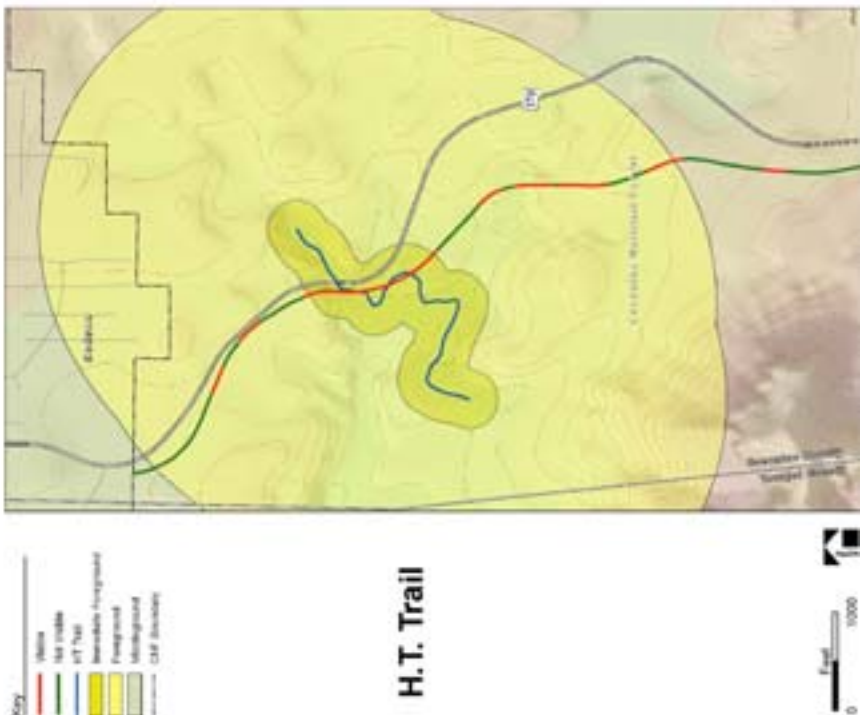
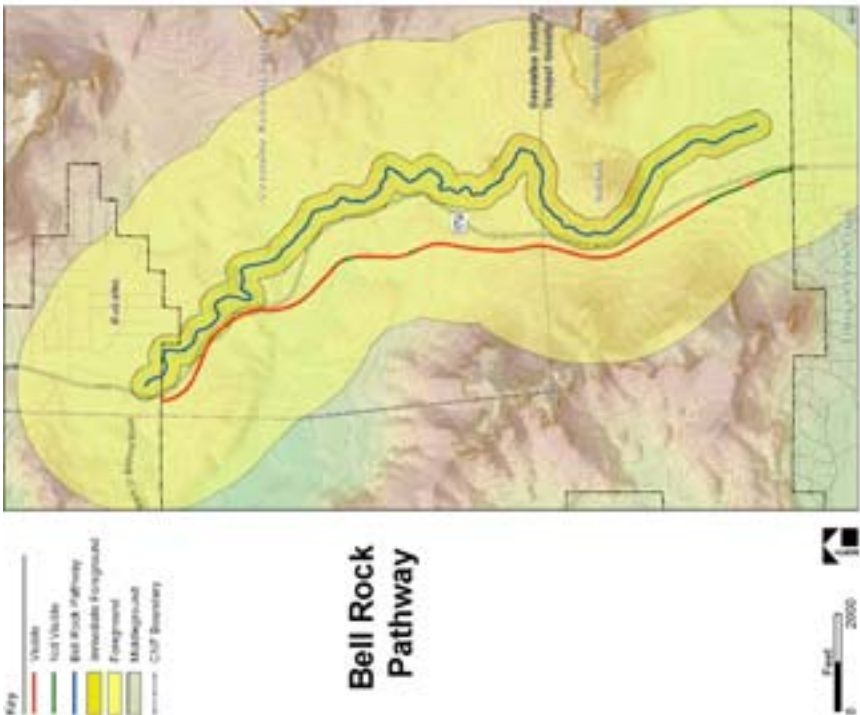
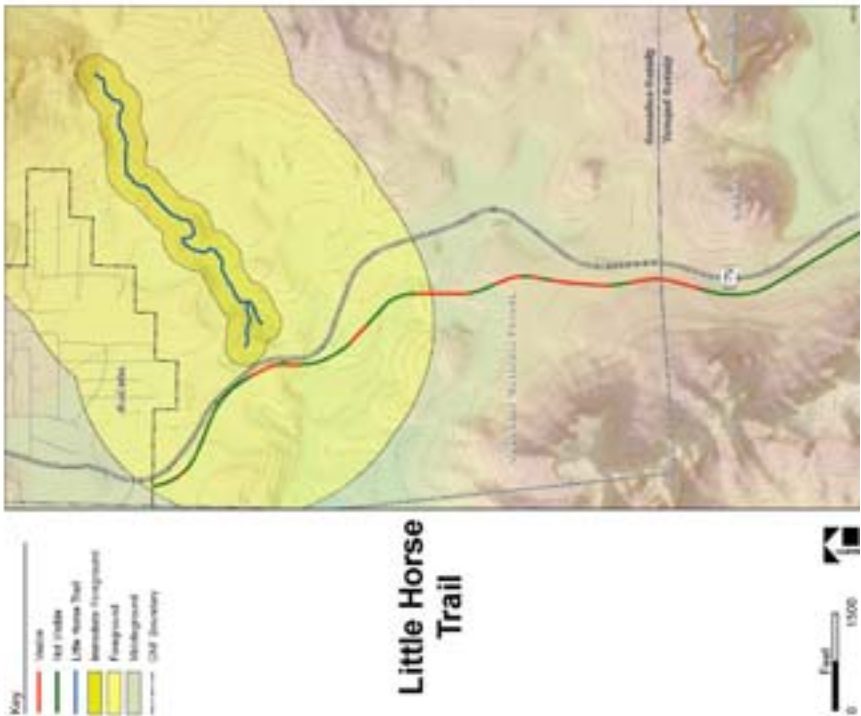
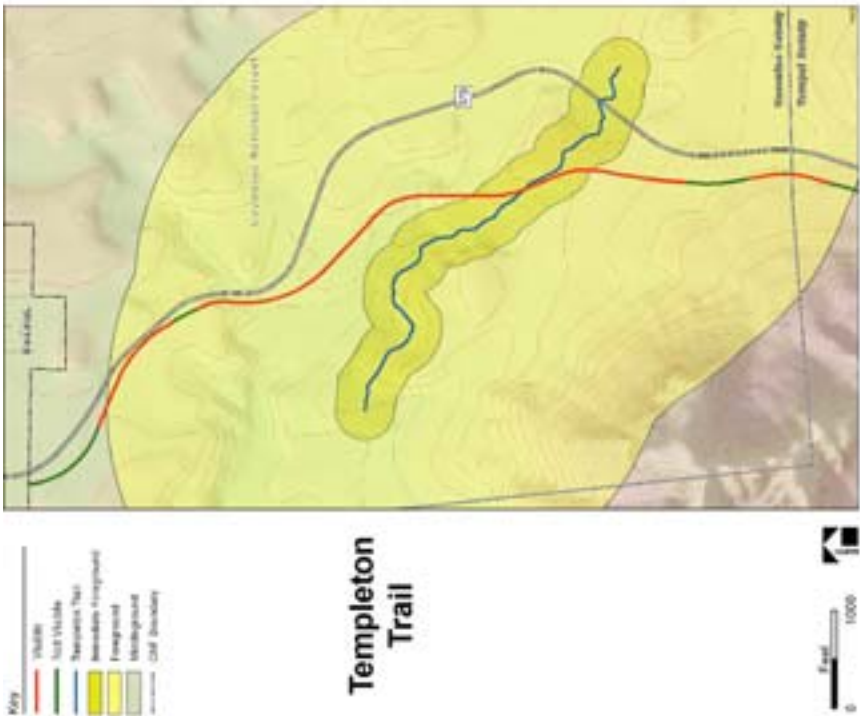
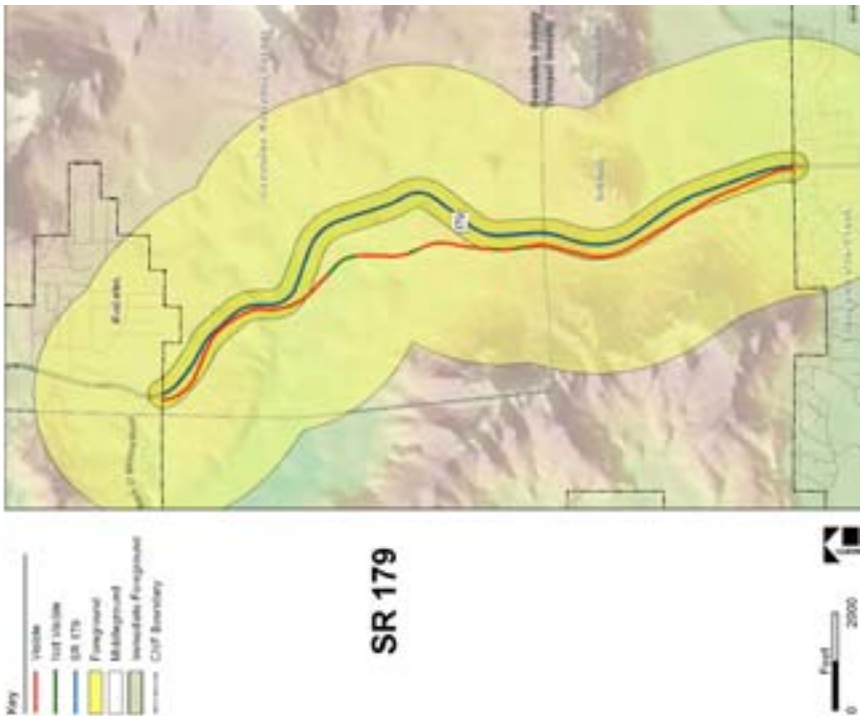
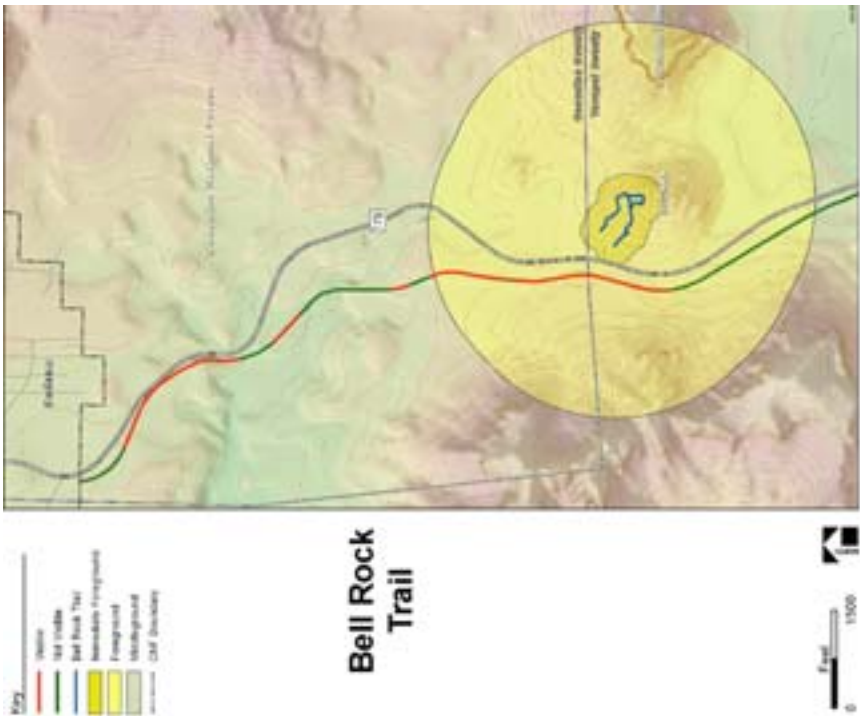


Figure III-6. Visibility Characteristics of the Yellow and Purple Alternatives

apparent from an aerial perspective. The 10-foot maintenance area would be readily apparent from the aerial perspective. Once revegetated materials mature and cover the soil with grasses or other types of vegetation, the long-term effect would be considered a subtle adverse impact.

The Yellow Alternative would have short- and long-term notable indirect adverse impacts. There are no designated trails along the west side of SR 179. The short-term impact would be the use of the 10-foot maintenance area as a designated recreation trail. This could result in opening other areas of the CNF not readily used by recreationists and could induce the trampling of vegetation and additional resource damage, which would lower the area's scenic attractiveness and level of integrity.

Cumulative Impacts. The areas potentially impacted in terms of cumulative impacts would be the same as those for the Blue Alternative. Past, present, and reasonably foreseeable projects that could cumulatively affect scenic resources include the combined visibility from the five designated trails in the project area. The new southbound SR 179 roadway, expansion of the Bell Rock North Trailhead, and the scenic pullouts would not be constructed. (The expansion of the trailhead and construction of the five scenic pullouts are considered components of the widening of SR 179.)

Compliance with Visual Quality Objectives/Scenic Integrity Levels. Long term, the construction of the Yellow Alternative would result in activities that would not meet the Retention or High SIL goals because the pipeline would create a corridor in the landscape that would not appear to be intact. A VQO of Partial Retention/Moderate Scenic Integrity would be predicted as a result of the implementation of the Yellow Alternative because of the minimal 10-foot width of the maintenance ROW. The deviation from the natural landscape would be considered visually subordinate to the existing landscape character.

e. Purple Alternative

The Purple Alternative would follow along the southbound alignment of the new SR 179 before crossing the northbound travel lanes to continue through the Village of Oak Creek. The magnitude of change in the landscape character created by the construction of the Purple Alternative would be a substantial direct adverse impact in the short term, assuming that the new SR 179 is not constructed before the proposed pipeline. The ground-disturbing activities would remove or trample existing vegetation and expose soil from grading and grubbing activities during construction. The level of naturalness of this area and the scenic attractiveness would be substantially lowered from the existing conditions in the short term.

The majority of the long-term impacts from the Purple Alternative would be considered subtle direct adverse impacts, because this alternative assumes that the highway would be constructed. As the revegetated materials would mature and cover the exposed earth, they would soften any minor grading effects that would have occurred during construction. A substantial adverse effect would occur where the relatively small portion of the Purple Alternative's alignment (approximately 0.09 mile) would have visible slopes greater than 18 percent. The presence of the proposed pipeline would create less of an impact to

the scenic resources of the project area than the new SR 179 because of the wider footprint that would be required for the construction of the roadway.

View from Designated Trails. Portions of the Purple Alternative would be visible for 64 percent of the time for trail users on Bell Rock Pathway and the Templeton, Bell Rock, H.T., and Little Horse Trails (Figure III-6). Of the approximately 18.6 miles of alternative that would be located collectively within the trails' three distance zones, approximately 8.6 miles would be visible. Similarly, within the immediate foreground area of Bell Rock Pathway, the visibility of the Purple Alternative would be the same as the Yellow Alternative.

Analogous to the Blue, Red, and Orange Alternatives, the Purple Alternative would not be visible in the immediate foreground or middleground area from any of the three trail confluence viewpoints. It would be least visible (6 percent) from the confluence with Bell Rock Pathway and the Big Park Loop Trail and the south confluence of the Bell Rock Pathway and Courthouse Loop Trail than from the other viewpoint. Approximately 80 percent of the Purple Alternative would be visible in the foreground area of the north confluence with Bell Rock Pathway.

View from Project Area. The southern portion of the Purple Alternative would be less visible within a 0.5-mile radius than would the northern portion, similar to the southern portion of the Orange Alternative since it would follow the new SR 179 northbound alignment as well (Figure III-3). In the northern portion of this alternative, it appears that the visibility substantially diminishes to the east of the Purple Alternative, near the 0.5-mile limit.

View from the SR 179 Corridor. In the immediate foreground of the SR 179/Red Rock Scenic Road, 99 percent of the Purple Alternative would be visible for 69 percent of the time (Figure III-6). Visibility from the foreground of SR 179 (36 percent of the alternative) would be substantially less than the immediate foreground, as well as substantially less in duration (5 percent of the time) from the highway. The Purple Alternative would not be visible in the middleground of SR 179.

Similar to the Blue, Red, and Orange Alternatives, the Purple Alternative would have a notable direct adverse short-term effect on the landscape from the clearing of vegetation and exposure of soil that would be apparent from an aerial perspective. The 10-foot maintenance area would be readily apparent from the aerial perspective. Once revegetated materials mature and cover the soil with grasses or other types of vegetation, the long-term effect would be considered a subtle adverse impact.

The Purple Alternative would have short- and long-term notable indirect adverse impacts. There are no designated trails along the west side of SR 179. The short-term impact would be the use of the 10-foot maintenance area as a designated recreation trail. This could result in opening other areas of the CNF not readily used by recreationists and could induce the trampling of vegetation and additional resource damage, which would lower the area's scenic attractiveness and level of scenic integrity. Once the highway were constructed, the treeless 10-foot-wide maintenance area could continue to create

opportunities where visitors would pull-off their vehicles and park within the highway ROW to gain access to the CNF. Since the distance from the edge of the roadway to the pipeline maintenance area is relatively short, keeping visitors from parking in the 10-foot maintenance area would be problematic and would continue to provide the opportunity for unauthorized parking. Construction of the new SR 179 southbound roadway would mask the Purple Alternative's impacts to the landscape's scenic resources.

Cumulative Impacts. The area potentially impacted in terms of cumulative impacts and the past, present, and reasonably foreseeable projects that could cumulatively affect scenic resources are the same as for the Blue Alternative. The cumulative impacts noted in the Blue, Red, and Orange Alternatives would also be the same for the Purple Alternative.

Compliance with Visual Quality Objectives/Scenic Integrity Levels. The existing VQO for the project area within the CNF is Retention. However, the VQOs for the landscape within the foreground area of the new SR 179 range from Retention to Modification/High to Low SILs, depending on the modifications to the land that have been created by the roadway. Long term, the construction of the Purple Alternative would result in activities that would not meet the Retention or High SIL goals because the pipeline would be a part of the highway corridor and the landscape in the corridor would not appear to be intact. The Purple Alternative would not lower the existing achieved VQOs/SILs in the long term.

f. No Action Alternative

Under the No Action Alternative, no pipeline would be constructed and no ground-disturbing activities would occur. There would be no direct, indirect, or cumulative impacts to scenic resources from the No Action Alternative.

g. Village of Oak Creek and CNF South of the Village of Oak Creek

There would be no direct, indirect, or cumulative scenic resource impacts in the Village of Oak Creek because the proposed pipeline would be bored under existing streets. The small portion of the proposed pipeline that would occur on National Forest lands would have a notable short-term adverse impact during construction because of the removal of vegetation and exposure of soil. Once revegetated materials would mature, the long-term impacts would be negligible because the levels of naturalness and scenic attractiveness in this area are low. The landscape is currently dominated by the adjacent residential area and associated infrastructure. There would be no indirect or cumulative impacts related to the construction of the proposed pipeline on this portion of the CNF.

The short-term direct impacts would be relatively comparable for each of the build alternatives from the clearing of vegetation an exposure of soil that would be apparent. The amount of National Forest land that would be permanently incorporated into a maintenance ROW ranges from 5.5 to 6.3 acres of land. The Blue Alternative would have the most impact on the existing Red Rock Scenic Road by creating a notable

change in the spatial enclosure. There may, however, be increased opportunity to view the surrounding terrain because of the removal of trees and large shrubs. With the implementation of the mitigation measures, the Red Rock Scenic Road designation would be maintained in this portion of SR 179. The Red and Orange Alternatives would impact some of the most sensitive landscapes because the proposed pipeline alignment would be coincident with the Bell Rock Pathway (1.3 miles and 1.0 mile, respectively).

The Bell Rock Pathway is one of the area's most popular and most highly used trails. The Yellow Alternative would result in a clearly detectable impact on the landscape and would lower the level of naturalness and scenic attractiveness.

The Yellow Alternative would be the least visible from all the designated trails, particularly in the immediate foreground area. The Blue and Orange Alternatives are relatively comparable in terms of visibility in each of the three distance zones, and the Red Alternative would be the most visible from the designated trails. The north confluence of the Bell Rock Pathway and the Courthouse Loop Trail would be the most visible single viewpoint from the foreground of each of the build alternatives. Approximately 80 percent of the Yellow and Purple Alternatives would be visible from the north confluence of the Bell Rock Pathway and the Courthouse Loop Trail. None of the three trail confluence viewpoints would be visible in the immediate foreground or middleground of any of the build alternatives.

Comparing the relative range of visibility of the build alternatives indicates that the Blue, Yellow, and Purple Alternatives would be the most visible within a 0.5-mile radius. The Orange and Red Alternatives would appear to have equal extents of high and low areas of visibility. The Blue, Red, Orange, and Purple Alternatives would be the least noticeable from an aerial perspective because they would follow either an existing or planned linear corridors and would not create a new pattern in the landscape.

I. Recreation/Wilderness

i. Affected Environment

The Oak Creek Canyon and the Sedona area are well known within Arizona, as well as within the United States, for their diverse recreation opportunities. Residents and visitors alike come to Sedona to hike and view the red rock formations and Oak Creek Canyon. Recreation use is predominantly dispersed-use activities such as scenic viewing, hiking, mountain biking, horseback riding, photography, camping, and bird watching. Because the land adjacent to the project area contains a signature rock formation (Bell Rock) and wilderness areas associated with Sedona, this CNF land has a high recreation and scenic resource value. According to CNF, the Sedona/Oak Creek Canyon area attracts more tourists than the Grand Canyon National Park [#9].

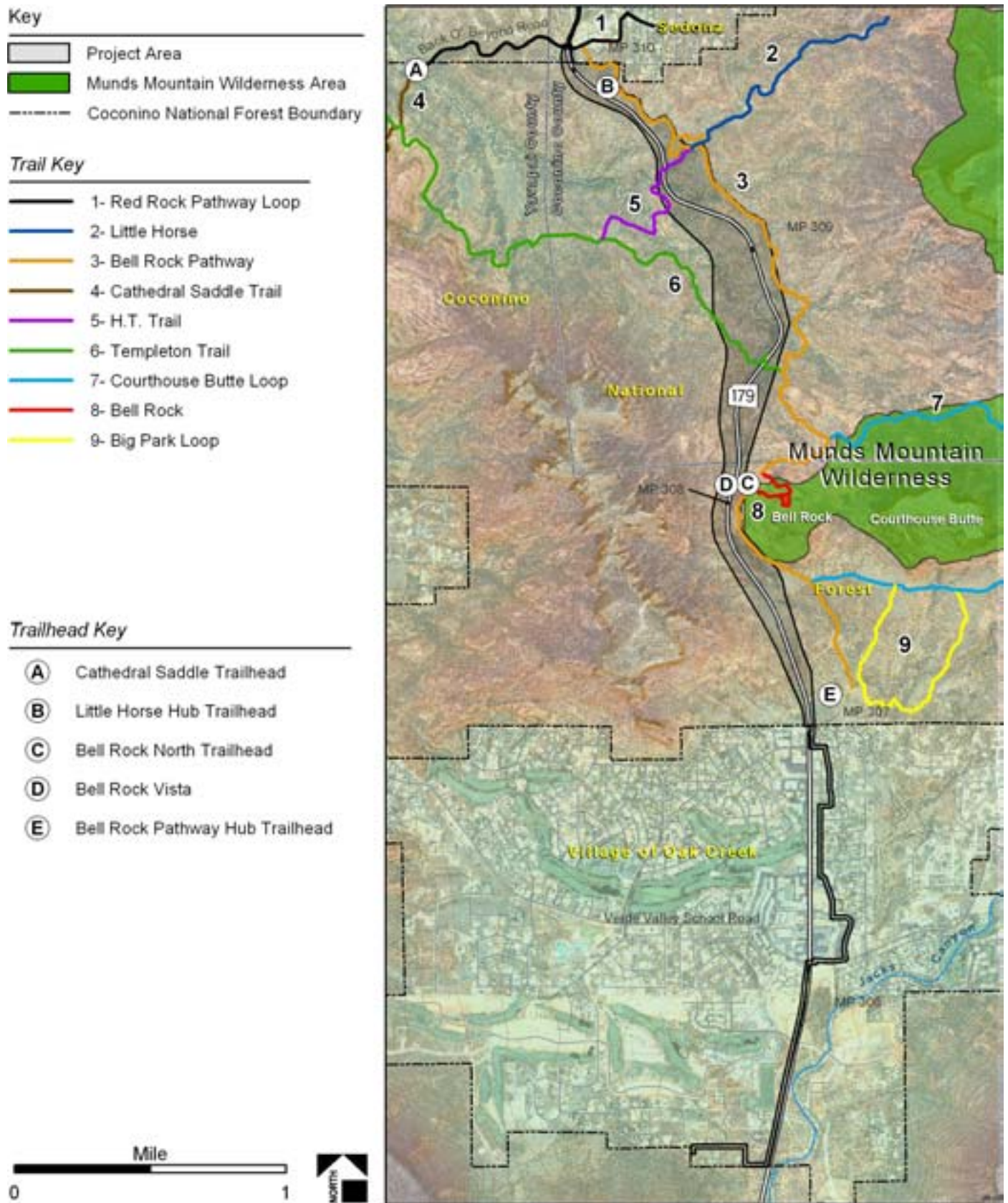


Figure III-7. Existing Recreation Facilities/Wilderness Areas

Four trails are located within or adjacent to the project area: Little Horse, Bell Rock Pathway, H.T. Trail, and Templeton Trail (Figure III-7). Two of these trails connect to other trails in the project vicinity. The Templeton Trail is connected to the Cathedral Saddle Trail, and the Bell Rock Pathway connects to Bell Rock, Courthouse Butte Loop, and the Big Park Loop.

The H.T. Trail and Templeton Trail intersect the project area roughly perpendicular to all five build alternatives. The H.T. Trail crosses the project area in a northeast-southwest alignment near SR 179's MP 309.5, connecting the Templeton Trail west of the project area to the Bell Rock Pathway and Little Horse Trail. The Templeton Trail crosses the project area in a northwest-southeast orientation, passing under SR 179 through a box culvert near MP 308.4.

The Bell Rock Pathway roughly parallels SR 179 to the east. This trail is the main segment of the greater CNF's Red Rock Pathways. The Red Rock Pathways, a system of recreational paths, trails, and trailheads, is designed to connect the Village of Oak Creek, Sedona, and Red Rock State Park in a loop. Bell Rock Pathway would be partially within the same alignment as the Red and Orange Alternatives. Three trailheads are present along Bell Rock Pathway within the project area: Little Horse Hub⁶ Trailhead (at the confluence of Bell Rock Pathway and Little Horse), Bell Rock North Trailhead, and Bell Rock Vista—which is located west of the Bell Rock Pathway and SR 179.

The Little Horse Hub Trailhead provides interpretive facilities, as well as parking (cars, buses, equestrian trailers), restrooms, and amenities (e.g., benches). The Bell Rock North Trailhead provides limited parking off SR 179 as well as interpretive facilities and amenities. The Bell Rock Vista provides parking, interpretive facilities, and amenities. The Bell Rock Pathway Hub Trailhead, is located east of, and outside the project area, but is accessible from SR 179.

CNF uses the USFS Recreation Opportunity Spectrum (ROS) to provide a framework for defining and rating classes of outdoor recreation environments, activities, and experience opportunities. The system's premise is that recreation users choose a specific setting for a particular activity or set of activities to have a desired experience. Six settings or classes have been delineated, ranging from pristine undisturbed landscapes to areas heavily impacted by human presence. The ROS class designations include Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Natural, Rural, and Urban.

According to the *Coconino National Forest Land and Resource Management Plan* the project is located within Rural classes in the city of Sedona and the Village of Oak Creek, and within a Roaded Natural class for its length on the CNF [#43]. The Rural classification is defined as “[l]ess developed than in Urban, typical of agricultural areas. Paved or gravel all-weather roads, moderate to high numbers of encounters with other people, high management presence, facilities are generally more rustic, but common and convenient, moderate degree of ‘naturalness’” Areas classified as Rural are located within the limits of Sedona and of the Village of Oak Creek. These areas are on private lands and are not required to meet

⁶ Designation of a “hub” trailhead indicates that this is a primary connection to the entire trail system and/or a heavily used trail.

ROS classification guidelines. The Roaded Natural classification is defined as “[p]aved or gravel all-weather roads, moderate number of encounters, moderate management presence, rustic facilities, moderate to high degree of ‘naturalness’” Within the project area, the Roaded Natural classification follows the existing SR 179 corridor.

The project area is immediately adjacent to, and west of, areas classified as Semi-primitive Non-motorized and Primitive. The Semi-primitive Non-motorized (SPNM) class is defined as “[t]rail access only—no motorized vehicles, low number of encounters with other people, subtle and limited management presence, scarce rustic facilities constructed of native materials, high degree of ‘naturalness’ with infrequent evidence of human activity” This class is found east of the project area and north and south of Bell Rock. The area of Bell Rock (Munds Mountain Wilderness Area), however, is classified as Primitive, and defined as “[c]ross-country or primitive trail access, very few encounters with other people, low to non-existent management presence, facilities only for site protection—not for comfort, very high degree of “naturalness” [#43].

Munds Mountain Wilderness Area lies immediately east of the project area near Bell Rock (Figure III-7). The deep drainages and rugged nature of this Wilderness Area offer many opportunities for primitive recreation activities. Spectacular red cliffs, outstanding riparian habitat, great diversity of wildlife species, and many prehistoric cultural sites are found within its 18,311 acres. Access to the wilderness area is from SR 179 near Bell Rock, Woods Canyon Road, Broken Arrow Road, Schnebly Hill Road, Sombart Lane, and Jacks Canyon Road. Wilderness areas on the CNF are also designated as Wilderness Management Areas.

ii. Environmental Consequences

The potential impact of the proposed action on the recreational experience was identified as one of the key issues of this project. Visual impacts associated with recreation use are not reiterated in this section; please refer to Section III. H. Scenic Resources for more information.

For the build alternatives, noise impacts during construction and impacts of maintenance activities on recreation would occur with each of the build alternatives. Therefore, these impacts are summarized below and followed with a discussion of impacts common to each of the build alternatives. Alternative-specific direct, indirect, and cumulative impacts to recreation and wilderness area then described.

Construction of any of the build alternatives would result in short-term noise impacts associated with construction equipment.⁷ This would result in a temporary loss on the “Natural Quiet” —identified as one of the most important issues for the Sedona/Oak Creek ecosystem, and a “very important setting characteristic” for visitors to CNF [#43; #44]. The noise impacts associated with any construction activities

⁷ Noise impacts were not identified as an issue for this project and, therefore, are not discussed in a separate section. However, short-term noise associated with construction is discussed here to disclose the possible impacts to recreation and wilderness.

would have a short-term negative impact on user experience. Maintenance activities that may require use of motorized vehicles would present long-term, intermittent, minor impacts on the natural quiet. However, based on research associated with the decision notice for the *Coconino National Forest Plan Amendment 12*, most of the loss of natural quiet on the forest is attributed to noise associated with aircrafts—not motorized vehicle use [#43]. Therefore, the construction noise associated with any of the build alternatives would have a short-term adverse impact on recreational experience and negligible long-term indirect and cumulative impacts that could negatively affect recreational experiences in the forest.

The Courthouse Butte Loop, Big Park Loop, and Cathedral Saddle trails would not be directly impacted by any of the build alternatives; however, since these facilities are all part of an interconnected trail system, each may be affected by minor restrictions of trail-to-trail access.

Depending on terrain, access, and location relative to designated trails, the pipeline alignment would be driven (by all-terrain vehicles or cars) for maintenance activities. This maintenance activity may occur on designated trails. Closure of the trails would not be required for this access; trail users would temporarily step off the trail to allow passage of maintenance vehicles. During an emergency situation, full closures at any point along any of the build alternative alignments might be required and, therefore, could temporarily interrupt access to existing recreational facilities. In these emergency cases, UES would post signs indicating that the trail was closed.

With any of the build alternatives, UES would coordinate with CNF prior to construction to determine appropriate signs and other public notification for any trail closures required for construction, maintenance, or emergency access.

a. Blue Alternative

Because the Blue Alternative would be located at the edge of and inside the existing ADOT ROW, the alternative would, only temporarily, directly impact trails where they intersected the eastern alignment of SR 179. Portions of the H.T. and Templeton Trails, as well as access from the Bell Rock North and Bell Rock Hub Trailheads, would be temporarily closed during construction. These temporary closures during construction would result in minor restriction of trail-to-trail access throughout the recreation system. Because construction would be linearly sequential, only one trail segment/trailhead would be closed at any given time. Additionally, because of the pace of construction, the closures would be anticipated to last no more than 2 days. Where feasible, construction requiring full closures of existing recreational facilities would not occur on weekends or holidays. No permanent impacts to existing recreational facilities would occur.

Short-term noise impacts associated with construction activities and long-term noise impacts associated with maintenance vehicles might occur, but would be consistent with the noise impacts present along SR 179. Because the pipeline would be constructed adjacent to ADOT ROW, installation of the pipeline along SR 179 could require closure of one lane of traffic on SR 179. This would require a one-way flagged

lane for traffic and result in traffic congestion—a potential for avoidance of the Village of Oak Creek/Sedona area by recreation users. The visual impact of the identification posts along the roadway and the visual impact of the vegetation removal would have an adverse impact on the recreational experience associated with driving for pleasure—identified as the third most popular visitor activity in the area [#44]. However, this visual impact of the signs would be minimized by the CNF-approved brown color of the posts.

Because the Blue Alternative would be located at the edge of the existing ADOT ROW, the permanent pipeline ROW might be used as an informal trail. Although this may increase recreational opportunities, it would present additional management challenges to CNF staff for control of crowds.

The alignment would be under already-paved surfaces in Sedona and the Village of Oak Creek and would therefore have no impact on the Rural ROS in these areas. Because the informal trail on the CNF would not be consistent with the moderate-to-high degree of “naturalness ...” associated with the ROS of Roaded Natural, this alternative would contribute to the cumulative negative impacts to recreation in the Roaded Natural ROS. Therefore, the Blue Alternative would have minor negative direct and indirect impacts on recreation and would also have a minor negative cumulative impact on recreation.

The Blue Alternative would have no direct, indirect, or cumulative impact on the Munds Mountain Wilderness Area.

b. Red Alternative

The Red Alternative would generally follow the existing Bell Rock Pathway in the northernmost section of the project area, then divert from Bell Rock Pathway to continue south, where it would realign with the Bell Rock Pathway around Bell Rock, then follow along an existing Qwest Communications overhead telephone line to the Bell Rock Pathway Hub Trailhead access road, before continuing south through the Village of Oak Creek.

The Red Alternative would directly impact 1.3 miles of Bell Rock Pathway. Construction activities along Bell Rock Pathway would have a substantial short-term impact on recreational experience because of construction noise and the closure of trail segments. Construction equipment would create noise along the trail, detracting from the user experience in nearby trail segments that were open. Construction along Bell Rock Pathway would temporarily eliminate through-traffic during construction. Segment closures would also temporarily close segments of the Little Horse, Bell Rock, and Templeton Trails where they intersect the pipeline alignment. Potential, minor, trail-to-trail access would occur throughout the recreation system. Additionally, the Little Horse Hub and Bell Rock North Trailheads would be closed for up to 2 days. Bell Rock North Trailhead is one of the highest-use trailheads in the Red Rock Ranger District [#9], and currently has limited parking facilities. The temporary closure of this trailhead may indirectly impact traffic flow on SR 179. Because construction would be linearly sequential, only one trail segment/trailhead would

be closed at any given time. Of the build alternatives, the Red Alternative would have the greatest negative impact on recreation.

UES would reconstruct any areas of project disturbance to Bell Rock Pathway, thus providing for an improved trail surface by resurfacing the existing and deteriorating trail. In areas where the existing variable-width Bell Rock Pathway is too narrow for the 40-foot construction ROW, cutting of adjacent slopes (including bedrock) and fill placement would occur.

The portion of the pipeline alignments diverging from Bell Rock Pathway would create a 10-foot permanent ROW for required maintenance activities, and this could become an unofficial direct trail connecting existing segments of the Bell Rock Pathway (near its convergence with the Little Horse and H.T. Trail) and the Village of Oak Creek to Bell Rock. Although this informal trail would provide for additional recreational opportunities, it may divert users from the existing trails, and would be in conflict with the Redrock Frontcountry management emphasis of managing crowds to protect the environment. Therefore, segments of the maintenance easement diverting from established trails would be temporarily blocked from public access for vegetation restoration.

Permanent pipeline markers and the temporary and permanent scenic impacts associated with vegetation loss would detract from the recreational experience along the Bell Rock Pathway. Visitors to Bell Rock are visually sensitive, citing sightseeing as the most popular activity at this location [#9]. Furthermore, the presence of the pipeline markers and the presence of maintenance activities at Bell Rock might be inconsistent with the identified recreation goal of taking special actions in this area to provide visitors with an awareness of, and sensitivity to, the Munds Mountain Wilderness Area [#43]. However, this visual impact would be minimized by the CNF-approved brown color of the posts.

The Red Alternative would be under already-paved surfaces in Sedona and the Village of Oak Creek, and would therefore have no impact on the Rural ROS in these areas. The Red Alternative would contribute to the cumulative negative impacts to recreation in the Roaded Natural ROS by introducing additional facilities detracting from the “naturalness” of the area, which, when combined with the presence of SR 179 might cumulatively diminish the moderate-to-high degree of “naturalness ...” associated with the ROS of Roaded Natural.

Because of anticipated temporary and permanent impacts from construction noise, access during construction, and visual modification, the Red Alternative would have substantial negative direct and indirect impacts to recreation in the project area; it would, however, have the beneficial impact of repairing 1.3 miles of the currently eroding Bell Rock Pathway. The Red Alternative would contribute to the cumulative degradation of the recreation experience by likely inducing informal trails and a man-made feature to the landscape.

The alignment at Bell Rock (where bedrock cutting would be required), and the regular maintenance activities associated with the pipeline, would be inconsistent with the identified recreation goal of adjacent

uses that do not compromise wilderness values for the Wilderness Management Area. Because the project is not located within Munds Mountain Wilderness Area (or the associated Wilderness Management Area), and CNF does not provide a buffer for wilderness areas, the project would have no direct or indirect impact to wilderness areas. Therefore, the Red Alternative would not contribute to the cumulative degradation of this wilderness boundary area.

c. Orange Alternative

This alternative would generally follow the existing Bell Rock Pathway, then divert to continue south, where it would cross SR 179 at the Yavapai/Coconino County boundary (roughly between Bell Rock North Trailhead and Bell Rock Vista), continuing south along the proposed southbound lanes of the new SR 179 highway alignment, before crossing SR 179 to continue through the Village of Oak Creek.

The Orange Alternative would directly impact 1.0 miles of Bell Rock Pathway—0.3 miles less than the Red Alternative—and directly impact the Little Horse and Templeton Trails where they intersect the pipeline alignment. Construction activities along Bell Rock Pathway would have a substantial short-term impact to recreational experience because of construction noise and the closure of trail segments. Construction equipment would create noise along the Bell Rock Pathway, detracting from the user experience in nearby open trail segments. Construction along Bell Rock Pathway would temporarily close sections of the trail to through-traffic during construction. Segment closures would also temporarily restrict trail-to-trail access and temporarily close the Little Horse Hub for up to 2 days. Because construction would be linearly sequential, only one trail segment/trailhead would be closed at any given time. Additionally, because of the pace of construction, the closures would be anticipated to last no more than 2 days.

UES would reconstruct any areas of project disturbance to Bell Rock Pathway, providing an improved trail surface by resurfacing the existing deteriorated trail. In areas where the existing variable-width Bell Rock Pathway is too narrow for the 40-foot construction ROW, cutting of adjacent slopes and placement of fill would be required.

The portion of the pipeline alignments diverged from Bell Rock Pathway would create a 10-foot permanent ROW for required maintenance activities; although no trail would be constructed as part of this alternative, the utility corridor might be used as an informal trail to residents and visitors and become an unofficial corridor connecting existing segments of the Bell Rock Pathway (near its convergence with the Little Horse and H.T. Trails) and the Bell Rock Vista to the Village of Oak Creek. This informal trail could provide for additional recreational opportunities west of SR 179, in an area that currently has no designated trails. This informal, or rogue, trail might provide a recreational area for residents who believe that the number of visitors to Bell Rock is detracting from their recreational experience. However, the rogue trail might divert users from the existing trails east of SR 179, and might be a management issue for the Redrock Frontcountry emphasis on managing crowds to protect the environment. Additionally, users of the rogue trail following it north would have no loop opportunities and might forge additional informal trails east to reach the Bell Rock Vista or intermittent locations of SR 179. This might indirectly cause additional pedestrian/vehicular conflicts as these users attempt to cross the existing roadway to either loop back

toward the Village of Oak Creek or continue north along Bell Rock Pathway. Therefore, segments of the maintenance easement diverting from established trails would be temporarily blocked from public access for vegetation restoration.

Permanent pipeline markers and the temporary and permanent scenic impacts associated with vegetation loss would detract from the recreational experience along the Bell Rock Pathway. However, the visual impact of the signs would be minimized by the CNF-approved brown color of the posts. Because the Orange Alternative would cross to the west of SR 179, its impacts to recreation activities at Bell Rock would be limited to visual impacts to trail users at this location—refer to Section III. H. Scenic Resources for more information.

The Orange Alternative would be under already-paved surfaces in Sedona and the Village of Oak Creek and would therefore have no impact on the Rural ROS in these areas. In the northern portion of the project area (near the Little Horse Hub Trailhead), this alternative would contribute to the cumulative negative impacts to recreation in the Roaded Natural ROS by introducing additional facilities detracting from the “naturalness” of the area, and may, therefore, be inconsistent with the moderate-to-high degree of “naturalness ...” associated with the ROS of Roaded Natural. South of Bell Rock, if the alignment were used for rogue trails, no current visitor expectation would exist and the presence of pipeline markers and visual impacts from the 10-foot maintenance ROW might offset the diminished presence of SR 179 to the east, maintaining an atmosphere consistent with the Roaded Natural ROS. Unlike the Red Alternative, the Orange Alternative would have no direct impact on the base of Bell Rock, as it crosses to the west of SR 179, north of the Bell Rock formation.

Because of anticipated temporary and permanent impacts from construction noise, access during construction, and visual modification, the Orange Alternative would have moderate negative direct and indirect impacts on recreation in the project area; it would, however, have the beneficial impact of repairing portions of the currently eroding Bell Rock Pathway. The Orange Alternative would contribute to the cumulative degradation of the existing recreation experience by inducing informal trails and introducing additional man-made features to the landscape that would be visible from currently established trails (especially in the northern portion of the project area).

The Orange Alternative is located 500 feet from the Munds Mountain Wilderness. CNF does not provide a buffer for wilderness areas; therefore, the project would have no direct impact to wilderness areas. The Orange alignment would be across SR 179, be buffered from the wilderness area, and would not compromise wilderness values for the Wilderness Management Area. Although temporary noise impacts associated with construction might be heard from the perimeter of the Wilderness Area, noise from maintenance activities would be consistent with existing traffic-generated noise on SR 179. The presence of the pipeline markers and the permanent ROW would be buffered from the Munds Mountain Wilderness Area. Therefore, there would be no secondary or cumulative impacts to this resource.

d. Yellow Alternative

The Yellow Alternative would follow along the southbound alignment of FHWA and ADOT's SR 179 EA proposed improvements (in the suggested bifurcated section) before continuing south through the Village of Oak Creek. This alternative assumes that the highway would not be built and that the pipeline alignment would be used for maintenance of the gas line and as a recreational trail.

Construction of the Yellow Alternative would directly impact small segments of the H.T. and Templeton Trails, where these existing facilities intersect this proposed pipeline alternative. This would have a moderate short-term impact to recreational experience along these trails because of construction noise and the closure of trail segments. Construction equipment would create noise along the trail, detracting from the user experience in nearby trail segments that were open. During construction, small segments would be closed to through-traffic; these temporary closures would also restrict access to other trail connections (e.g., eastbound users could temporarily not connect to Bell Rock Pathway). No existing trailheads would be directly impacted by the Yellow Alternative. Because construction would be linearly sequential, only one trail segment would be closed at any given time and, because of the pace of construction, the closures would be anticipated to last no more than 2 days. Where feasible, construction requiring full closures of existing recreational facilities would not occur on weekends or holidays. Because the Yellow Alternative would be constructed west of SR 179, it would have a negligible impact on recreational driving.

Under the Yellow Alternative, the pipeline alignment would be constructed as a 10-foot-wide trail, which would serve to connect Sedona to the Village of Oak Creek and the H.T. Trail to the Templeton Trail. The trail would provide for additional recreational opportunities west of SR 179, in an area that currently has limited designated trails, and might provide recreation opportunities for residents who believe that the number of tourists to Bell Rock (and its associated trails) is detracting from their recreational experience. Pipeline identification posts would be constructed adjacent to the trail and would serve as trail markers. Maintenance activities (occurring 3–4 times a year) would not require closure of the trail, and through traffic would be maintained. Although the marker posts and occasional noise from maintenance activities would detract from the recreational use, because no trail is present along this alignment, there would be minimal existing user expectations to meet. The trail created by the alignment would not conform to the *Red Rock Pathways Planning Map* [#45].

The Yellow Alternative would be under already-paved surfaces in Sedona and the Village of Oak Creek and would therefore have no impact on the Rural ROS in these areas. This alternative would introduce facilities detracting from the “naturalness” of the area at other existing trails from which the Yellow Alternative would be visible. However, the distance of the new trail from SR 179 and revegetation would offset the visibility of the identification posts and would maintain a moderate-to-high degree of “naturalness ...” associated with the ROS of Roaded Natural. The trail would provide convenient access for residents in Sedona and the Village of Oak Creek and would also encourage the self-directed, day-use activity of hiking and scenic viewing—consistent with the recreation objectives of the Neighborwoods and Redrock Frontcountry Management Areas within which the project is located.

The Yellow Alternative's associated temporary and permanent impacts from construction noise, access during construction, and visual modification on existing recreational facilities are considered to be minor; the construction of the alignment as a formal trail would be a beneficial impact to area recreation. The Yellow Alternative would contribute to the cumulative beneficial impact of the recreation experience (when added to recreation facility improvements planned by CNF) by introducing an additional formal trail to connect with existing recreational facilities. The Yellow Alternative is the only build alternative considered that would have a beneficial impact on recreation.

At its closest point, the Yellow Alternative is located 500 feet from the Munds Mountain Wilderness. The CNF does not provide a buffer for wilderness areas; therefore, the project would have no direct impact to wilderness areas. The Yellow alternative would be across SR 179, be buffered from the wilderness area, and would not compromise wilderness values for the Wilderness Management Area. Although temporary noise impacts associated with construction might be heard from the perimeter of the wilderness area, noise from maintenance activities would be consistent with existing traffic-generated noise on SR 179. The addition of a new trail west of SR 179 might divert visitors from Bell Rock Pathway, contributing to less "wear and tear" on the wilderness boundary. The presence of the pipeline markers and the permanent ROW would be buffered from the Munds Mountain Wilderness Area. Therefore, there would be no direct, secondary or cumulative impacts to this resource.

e. Purple Alternative

The Purple Alternative would follow along the southbound alignment of FHWA and ADOT's SR 179 EA proposed improvements (in the suggested bifurcated section) before continuing south through the Village of Oak Creek. This alternative assumes that the highway would be built and that the pipeline alignment would be constructed within the proposed ADOT SR 179 ROW.

Construction of the Purple Alternative would directly impact small segments of the H.T. and Templeton Trails, where these existing facilities intersect this proposed pipeline alternative. This would have a moderate short-term impact to recreational experience because of construction noise and the closure of trail segments. Construction equipment would create noise along the trail, detracting from the user experience in nearby open trail segments. During construction, small segments would be closed to through-traffic; these temporary closures would also restrict access to trail connections (e.g., eastbound users could temporarily not connect to Bell Rock Pathway). Because construction would be linear, only one trail segment would be closed at any given time and, because of the pace of construction, the closures would be anticipated to last no more than 2 days. Where feasible, construction requiring full closures of existing recreational facilities would not occur on weekends or holidays.

As assumed under the Purple Alternative, the FHWA and ADOT SR 179 EA proposed alignment would potentially move the Bell Rock Vista Trailhead to a new location, which could be used as trailheads to access Templeton Trail and the Bell Rock Pathway. Scenic pullouts would also potentially be located at MP 309.1 and at MP 307.3. Scenic pullouts constructed by ADOT, as assumed under this alternative,

would provide safer vehicular and pedestrian access to recreation sites. For additional details on the proposed SR 179 improvements, refer to *SR-179, Village of Oak Creek to Sedona Environmental Assessment* [#15]. The Purple Alternative would follow the proposed southbound alignment of FHWA and ADOT's SR 179 EA and, therefore, not conflict with the beneficial recreation impacts associated with ADOT's proposed improvements.

The construction of the Purple Alternative west of SR 179 would have a negligible impact to recreational driving. Pipeline identification posts would be constructed adjacent to the proposed southbound alignment of FHWA and ADOT's SR 179 EA and would be consistent with the modern materials associated with the highway, therefore not detracting from the recreational driving experience.

The Purple Alternative would be under already-paved surfaces in Sedona and the Village of Oak Creek and would therefore have no impact on the Rural ROS in these areas. The pipeline alignment would be consistent with the roadway construction, and no change from the area ROS of Roaded Natural is anticipated to occur.

The Purple Alternative's associated temporary and permanent impacts from construction noise, access during construction, and visual modification on existing recreational facilities are considered to be negligible; the alignment would occur within the highway footprint. Because the alignment would be located within the proposed southbound alignment of Federal Highway and ADOT's SR 179 EA, use of the 10-foot permanent maintenance ROW for an informal trail would be unlikely, because of the proximity of vehicular traffic on SR 179. As part of the new ADOT EA highway ROW (as assumed under this alternative) the Purple Alternative would have no cumulative impact on recreation.

As with the Yellow Alternative, the Purple Alternative is located 500 feet from the Munds Mountain Wilderness. CNF does not provide a buffer for wilderness areas; therefore, the project would have no direct impact to wilderness areas. The Purple Alternative would be across SR 179, be buffered from the wilderness area, and would not compromise wilderness values for the Wilderness Management Area. Although temporary noise impacts associated with construction might be heard from the perimeter of the wilderness, noise from maintenance activities would be consistent with existing traffic-generated noise on SR 179. The presence of the brown pipeline markers and the permanent ROW would be buffered from the Munds Mountain Wilderness Area. Therefore, there would be no direct, indirect, or cumulative impacts to this resource.

f. No Action Alternative

Because no construction would occur under this alternative, the No Action Alternative would have no direct, indirect, or cumulative impact on existing recreation or wilderness areas.

J. Air Quality

i. Affected Environment

The project is located in the Verde River Airshed, in an area that meets all National Ambient Air Quality Standards. The closest Class I Airshed is the Sycamore Canyon Wilderness Area, located approximately 15 miles to the northwest.

ii. Environmental Consequences

a. Build Alternatives

Construction of any of the build alternatives would result in temporary deterioration of air quality, because of the operation of construction equipment and dust generated from construction activities. Exhaust constituents from the construction equipment would primarily consist of carbon monoxide, nitrogen oxide, hydrocarbons, particulate matter, and sulfur dioxide. These emissions would be temporary, and would cease once construction is complete. Dust generated during construction would be controlled by watering and/or use of other dust abatement measures. Proper maintenance of construction equipment would minimize exhaust emissions. Construction along existing SR 179 (as with the Blue Alternative) and within the Village of Oak Creek (required for all the build alternatives) might also result in temporary deterioration of air quality, because traffic in existing transportation corridors typically slows near construction zones.

Maintenance activities associated with the proposed pipeline would potentially require a motorized vehicle to travel the pipeline alignment up to four times a year. The impacts to air quality as a result of this maintenance would be negligible. If approved, any one of the build alternatives would provide for a more reliable natural gas supply to existing and future customers in Sedona; this may result in a beneficial indirect impact on air quality, because the use of natural gas could reduce local use of firewood. The City of Sedona has identified the reduction in wood smoke pollution as a goal to maintain its air quality—its Advisory Committee on Growth recommended an ordinance limiting wood-burning stoves and fireplaces [#46]. If approved, this project would not be expected to contribute to an adverse cumulative impact to air quality in the region.

b. No Action Alternative

Because the No Action Alternative would not require any activities, this alternative would have no direct, indirect, or cumulative impacts to air quality.

K. Environmental Justice

i. Affected Environment

Under Title VI of the Civil Rights Act of 1964, federal agencies are required to ensure that no person is excluded from participation in, denied benefits of, or subjected to discrimination under any program or activity receiving federal financial assistance on the grounds of race, color, religion, national origin, sex,

age, or handicap. In addition, Executive Order 12898, Federal Actions to address Environmental Justice in Minority and Low-Income Populations, signed by President Clinton on February 11, 1994, requires federal agencies to identify and address as appropriate, as part of project planning and decision making, and as an integral component of the NEPA process, the occurrence of disproportionately high and adverse effects on minority and low-income populations.

The demographic characteristics of the population of the project area were examined to determine whether protected populations would be disproportionately affected by the proposed project. These protected populations include people who are of a minority race; of Hispanic ethnicity; older than 16 years of age who are either work-disabled, have self-care limitations, or have a mobility disability; members of households below the poverty level; people greater than or equal to 60 years of age; and/or are a female who maintains a household with no spouse present while living with one or more people related to her by birth, marriage, or adoption.

Minority racial populations, as defined by the federal Census, include the following racial categories: African American, American Indian/Eskimo and Aleut (Native American), Asian and Pacific Islander, and "other race." In the census, the category "Hispanic" does not define a race, but is instead an ethnicity. Therefore, the category "Hispanic" was used for all Hispanics (regardless of race) even for those who identified themselves as "White."

The demographic composition of the project area was analyzed using data from the 2000 Census [47]. Information on census tracts and block groups was queried. Census tracts are small, relatively permanent statistical subdivisions of a county and do not cross county boundaries. Block groups, as used in this document, are even smaller statistical subunits of census tracts. For this document, block groups are used as the smallest level of census resolution representing 2000 Census data. The project area lies within three separate block groups (Figure III-8). Racial, ethnic, elderly, disabled, low-income, and female head of household population demographics within the project area are described below.

According to the 2000 Census, the average racial and ethnic population statistics for the project area are lower than or relatively close to the corresponding averages for the city of Sedona, Coconino and Yavapai Counties, and the state of Arizona (Table III-1 and Table III-2). There are no known minority neighborhoods within the project area.

According to the 2000 Census (Table III-2), low-income, female head of households, and disabled populations percentages of the project area are lower than or relatively comparable to the corresponding averages for the city of Sedona and Coconino and Yavapai Counties. The age 60 years and over population percentages are considerably higher than the corresponding averages for the Coconino and Yavapai Counties and the state of Arizona.

Table III-1. 2000 Racial and Ethnic Demographics

Area	Total Population	White		African American		Native American		Asian		Pacific Islander		Other Race		Two or More Races		Hispanic ^a	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
CT 16, BG 4	549	543	98.9	6	1.1	0		0		0	0	0	0	0	0	11	2.0
CT 17, BG 4	3,401	3,195	93.9	14	0.4	99	2.9	28	0.8	0	0	23	0.7	42	1.2	125	3.7
CT 17, BG 5	2,151	2,035	94.6	0	0.0	10	0.5	49	2.3	0	0	48	2.2	9	0.4	162	7.5
Total Tracts	6,101	5,773	94.6	20	0.3	109	1.8	77	1.3	0	0	71	1.2	51	0.8	298	4.9
Sedona	10,178	9,436	92.7	116	1.1	66	0.6	93	0.9	0	0	388	3.8	79	0.8	794	7.8
Yavapai County	167,517	153,932	91.9	449	0.3	2,597	1.6	847	0.5	76	0	5,954	3.6	3,662	2.2	16,300	9.7
Coconino County	116,320	73,702	63.4	1,368	1.2	32,826	28.2	894	0.8	194	0.2	4,645	4.0	2,691	2.3	12,692	10.9
Arizona	5,130,632	3,871,715	75.5	154,316	3.0	253,542	4.9	91,223	1.8	6,166	0.1	597,173	11.6	156,497	3.1	1,295,317	25.2

Source: U.S. Department of Commerce, Bureau of the Census. *Census 2000, Summary File 3.*

Note: See table notes for Table III-3, below.

^a "Hispanic" refers to ethnicity and is derived from the total population, not as a separate race; i.e., it is calculated differently from the other columns in this tab

Table III-2. 2000 Total Minority, Age 60 Years and Over, Below Poverty Level, Disabled, and Female Head of Household Populations

Area	Total Population	Total Minority ^a		Elderly		Total Population for Whom Disabled Is Determined	Disabled		Total Population for Whom Poverty Is Determined	Low-Income		Households		Female Head of Household	
		#	%	#	%		#	%		#	%			#	%
CT 16, BG 4	549	17	3.1	363	66.1	540	88	16.3	546	18	3.3	292		92	31.5
CT 17, BG 4	3,401	289	8.5	1,295	38.1	3,333	568	17.0	3,389	408	12.0	1,686		494	29.3
CT 17, BG 5	2,151	221	10.3	947	44.0	2,016	459	22.8	2,044	116	5.7	1,050		371	35.3
Total Tracts	6,101	626	10.3	2,605	42.7	5,889	1,115	18.9	5,979	542	9.1	3028		957	31.6
Sedona	10,178	1,036	10.2	3440	33.8	9,872	1,655	16.8	10,161	986	9.7	4,914		1,568	31.9
Yavapai County	167,517	22,533	13.5	47,380	28.3	156,572	34,220	21.9	163,663	19,552	12.0	70,069		18,218	26.0
Coconino County	116,320	49,232	42.3	11,824	10.2	107,350	17,511	16.3	113,076	20,609	18.2	40,386		11,084	27.4
Arizona	5,130,632	1,858,567	36.2	870,065	17.0	4,667,187	902,252	19.3	5,021,238	698,669	13.9	1,901,625		515,611	27.1

Source: U.S. Department of Commerce, Bureau of the Census. *Census 2000, Summary File 3.*

Notes: CT = Census Tract, BG = Block Group, CDP = Census Designated Place, # = Number, % = Percentage.

Shaded areas denote percentages higher than comparison areas' percentages.

^a "Total Minority" is composed of all people who consider themselves Non-White racially plus who consider themselves White Hispanic

ii. Environmental Consequences

a. Build Alternatives

For each of the build alternatives, the majority of the proposed project would occur on the undeveloped lands of the CNF, with 2.08 miles of the project area occurring in developed areas of the Village of Oak Creek. Through-traffic on SR 179 would not be impacted under the Red, Orange, Yellow, and Purple Alternatives. Because of the proximity of the Blue Alternative to in-use SR 179, construction would have a substantial impact on traffic congestion and operations for the duration of construction (anticipated for 5 months).

All the build alternatives would require some temporary street closures as construction progresses along existing streets. For busy roadways such as Jacks Canyon Road and Bell Rock Boulevard, the pipeline would be bored under the roadway and would therefore have no impact on traffic or business/residential access. Along less traveled roads, such as Canyon Diablo Road and Arabian Drive, temporary street closures would be necessary during construction. These street closures would typically last less than 2 days, and detours would be required. In case of emergencies, or if detours are not feasible, steel plates would cover the construction trench and provide immediate access. Traffic impacts associated with construction in the Village of Oak Creek would last approximately 2 month under each of the build alternatives. The traffic closures might result in indirect, temporary customer avoidance of businesses along specific portions of the construction route. Impacts to traffic patterns would affect all motorists; no disproportionate impacts were identified.

b. No Action Alternative

The No Action alternative would result in outages of natural gas to customers and insufficient natural gas for the heating seasons to customers in Sedona. Additionally, emergency situations could not be minimized by the presence of a reverse flow system, and outages to customers in the Village of Oak Creek might also occur. These impacts would affect all customers and residents in the region; therefore, no disproportionate impacts were identified.